ENGINEERING NEWS-RECORD

- Computer does pile group analyses p 20
- Vehicular tunnel costs in concrete p 24

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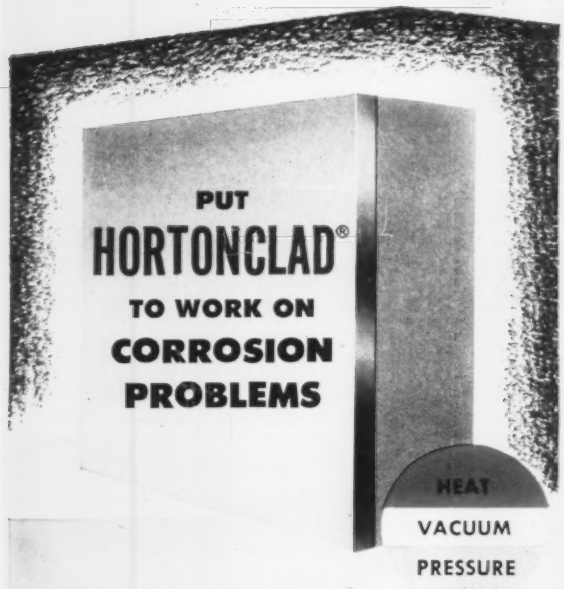

High-Strength Bonded Clad Material Described in New CB&I Bulletin

Hortonclad is a corrosion-resistant composite metal having an integral and continuous bond of exceptionally high strength produced by a special high-vacuum bonding process. Available only in CB&I-fabricated tanks, pressure vessels and other clad structures, Hortonclad provides uniform thickness because cladding and backing plate are both in their final thickness prior to bonding.

The Hortonclad process employs silver, stainless steels (both chromium and nickel) nickel and alloys such as Monel, Inconel, Hastelloys B and F and a variety of other metals and alloys.

Write our nearest office for a copy of the CB&I bulletin which describes these benefits of HORTONCLAD:

- UNIFORM THICKNESS
- HIGH STRENGTH BOND
- CLEAN, CONTAMINANT-FREE SURFACE
- ADAPTABILITY TO ANY SIZE OR SHAPE

Two crude columns (left) and vacuum column (right) were partially clad using Monel Hortonclad and stainless steel. Crude columns are 174-ft. high. Vacuum column is 28-ft. in dia. at widest point and 125-ft. high.

P71-C

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Bethlehem joists are described in Sweet's architectural file, and our nearest sales office will be glad to send you our joist catalog.

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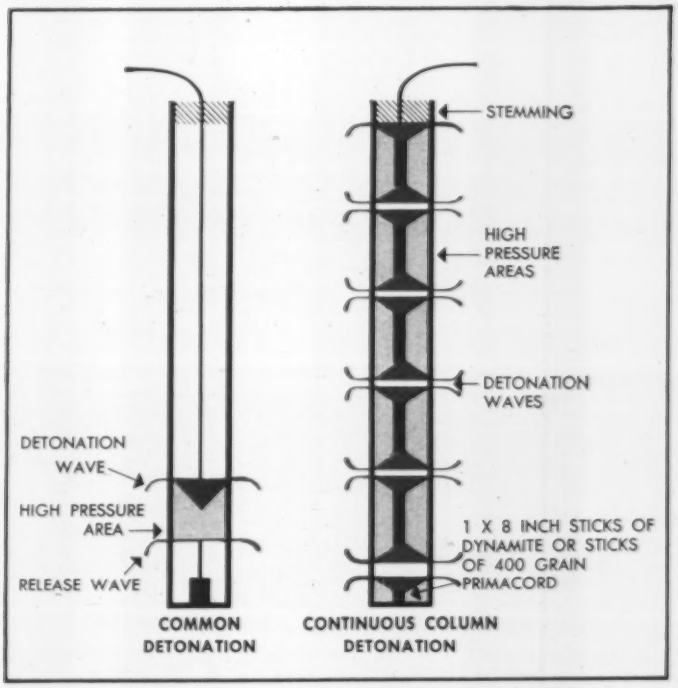
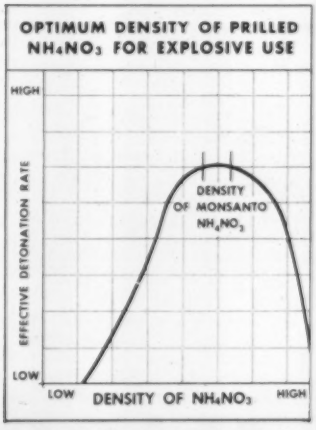
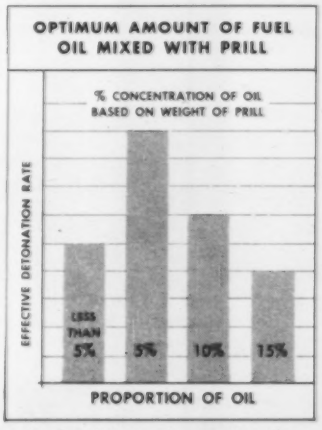
PRILLED AMMONIUM NITRATE IN CONTINUOUS COLUMN DETONATION GIVES BETTER BREAKAGE, SAVES DRILLING AND CRUSHING COSTS!

Continuous column detonation (right) gives better shatter because entire hole detonates approximately at speed of Primacord* (20,000 to 21,000 ft/sec.). Notice no release wave structure . . . entire hole works. Faster detonation cuts heat loss. Contained heat results in gas expansion—produces more work for less money. For the most favorable results, make sure hole is filled with NH_4NO_3 but don't risk destroying the best prill-pack by tamping. Pour oil in bag of Ammonium Nitrate. Let set for at least ½ hour before loading, or use mechanical mixer. Monsanto Ammonium Nitrate gives you optimum density of prilled NH_4NO_3 for explosive use *and* optimum prill size.

Ideal rock breakage, like this, reduces crushing costs. The Monsanto method of detonation, in conjunction with a new, top-quality prilled NH_4NO_3 that Monsanto research developed, will yield the equivalent of 60 % gelatin dynamite at ¼ the cost.







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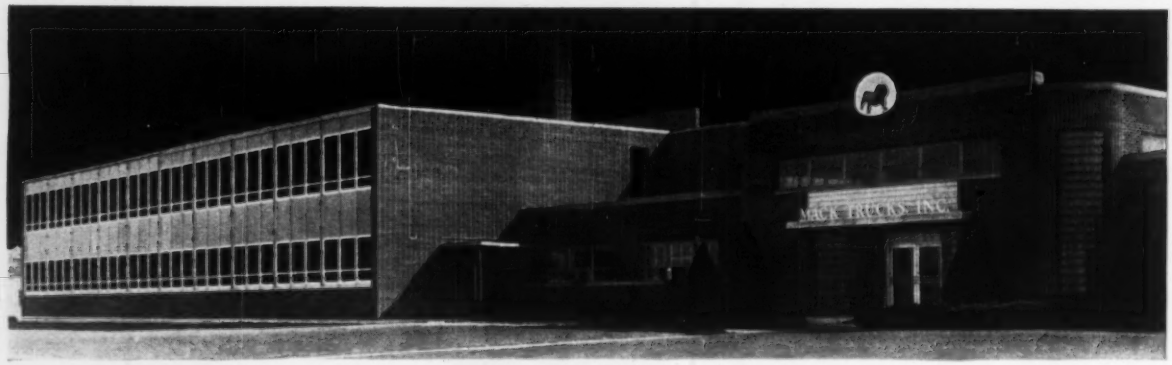
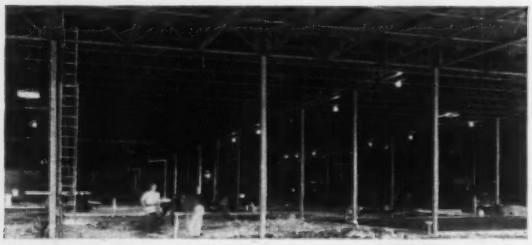


164,500 square foot addition to Mack Truck plant

Steel Erection — V-LOK is an exclusive Macomber interlocking framing system that requires no on-the-job bolting, riveting or welding.



Under Roof — V-LOK steel framing provides the ideal support for Macomber steel deck roofing. Workers were able to proceed with interior construction without delay.

Completed Building — Macomber V-LOK construction with V-LOK Girders and Purlins, provides large unobstructed bays for final truck assembly department.

...ALL V-LOK CONSTRUCTION

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The addition to the Mack Truck building in Sidney, Ohio, is another example of sound construction where Macomber V-LOK framing meant substantial savings in cost and time.

V-LOK framing was used exclusively on the new two-story engineering building with curtain wall construction and on other plant additions, totaling 164,500 square feet.

Contact your nearest Macomber representative or write us direct.

V-LOK Design Manual is available.

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CANTON 1, OHIO

Handsome modern Insulrock walls add beauty and sound-silencing efficiency to the best form of modern building designs

Good thing for Joshua that INSULROCK *had not been invented*

Why did those walls of Jericho come tumbling down when Joshua's loud trumpets blasted?

Suppose the sounds shook the walls to pieces? They couldn't absorb sounds, maybe?

What if those walls had been made of Insulrock Slabs, that absorbed Joshua's shattering sounds? Joshua might not have been famous.

Insulrock absorbs sounds. The air spaces that honeycomb Insulrock Building Slabs—used as walls, non-bearing partitions and exposed acoustical ceilings—trap and deaden up to 85% of clashing, disturbing surface-reflected noises in factory, office, assembly, and school rooms, and in hallways.

Ceilings are a bonus.

Insulrock exposed acoustical ceilings *cost nothing* when roofs have been decked with Insulrock Slabs, laid easily, speedily, economically, in year 'round weather, on wood or steel framing. The underside of the same Insulrock Roof Decking makes the free ceiling—off-white, good-looking "as is," random-textured, simple to paint and keep clean. So the ceiling really *is* free, you see.

Insulrock Building Slabs are made of special long fibers pressure-bonded with portland cement into pre-cut short or long slabs quickly applied to wood or steel framing. Incombustible. (Listed by Underwriters' Laboratories.) Resistant to all weather wear, insects, fungi. Effective insulation advantages that cut heating and air-conditioning costs. Practical, economical base for built-up roofing—for quickly installed non-bearing walls—for exposed acoustical ceilings.

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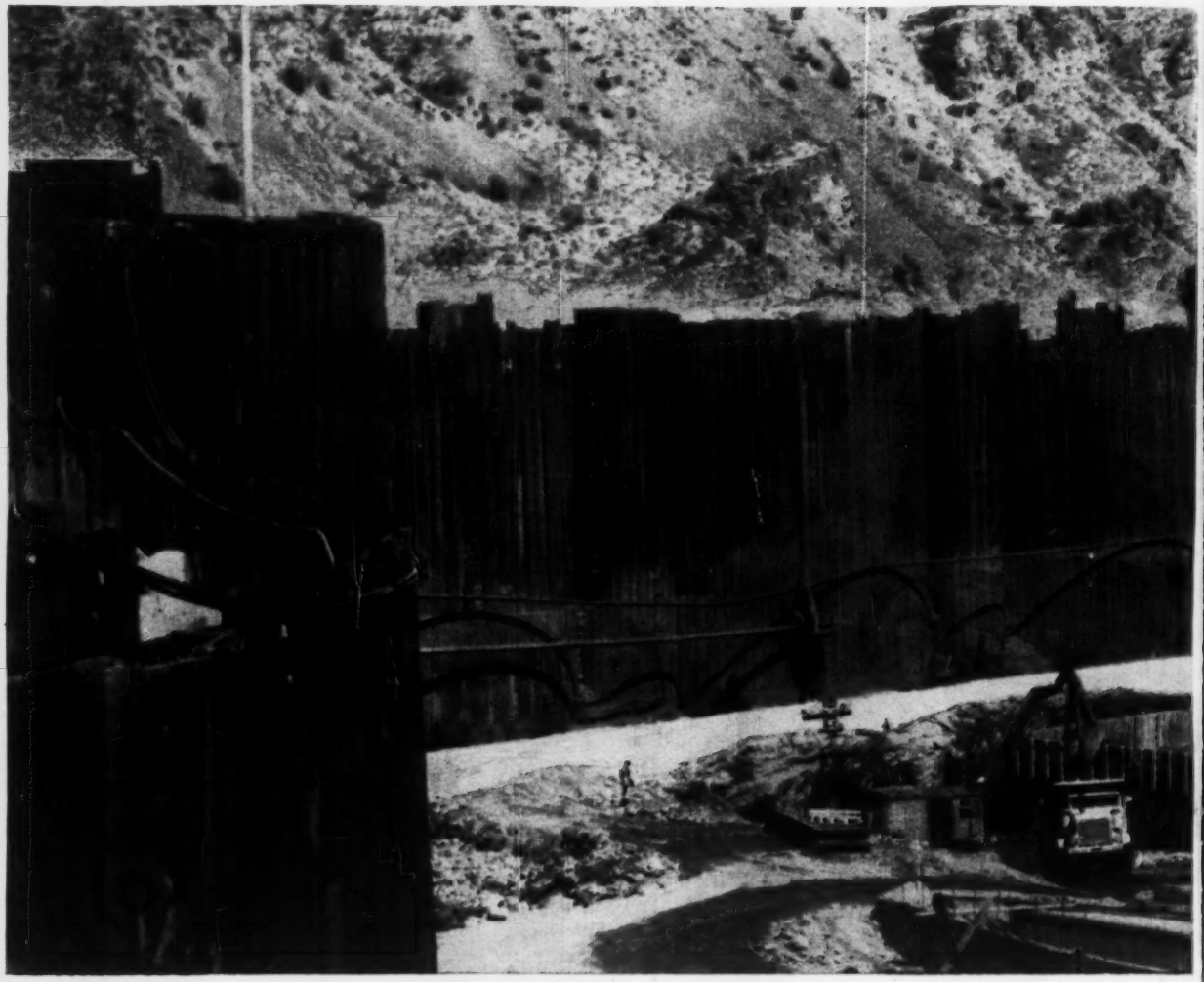
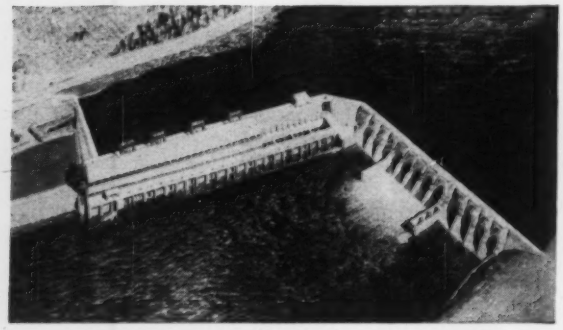


Cofferdam built tight and strong with USS MP-101 straight-web steel sheet piling.

5,600 tons of USS Steel Sheet Piling

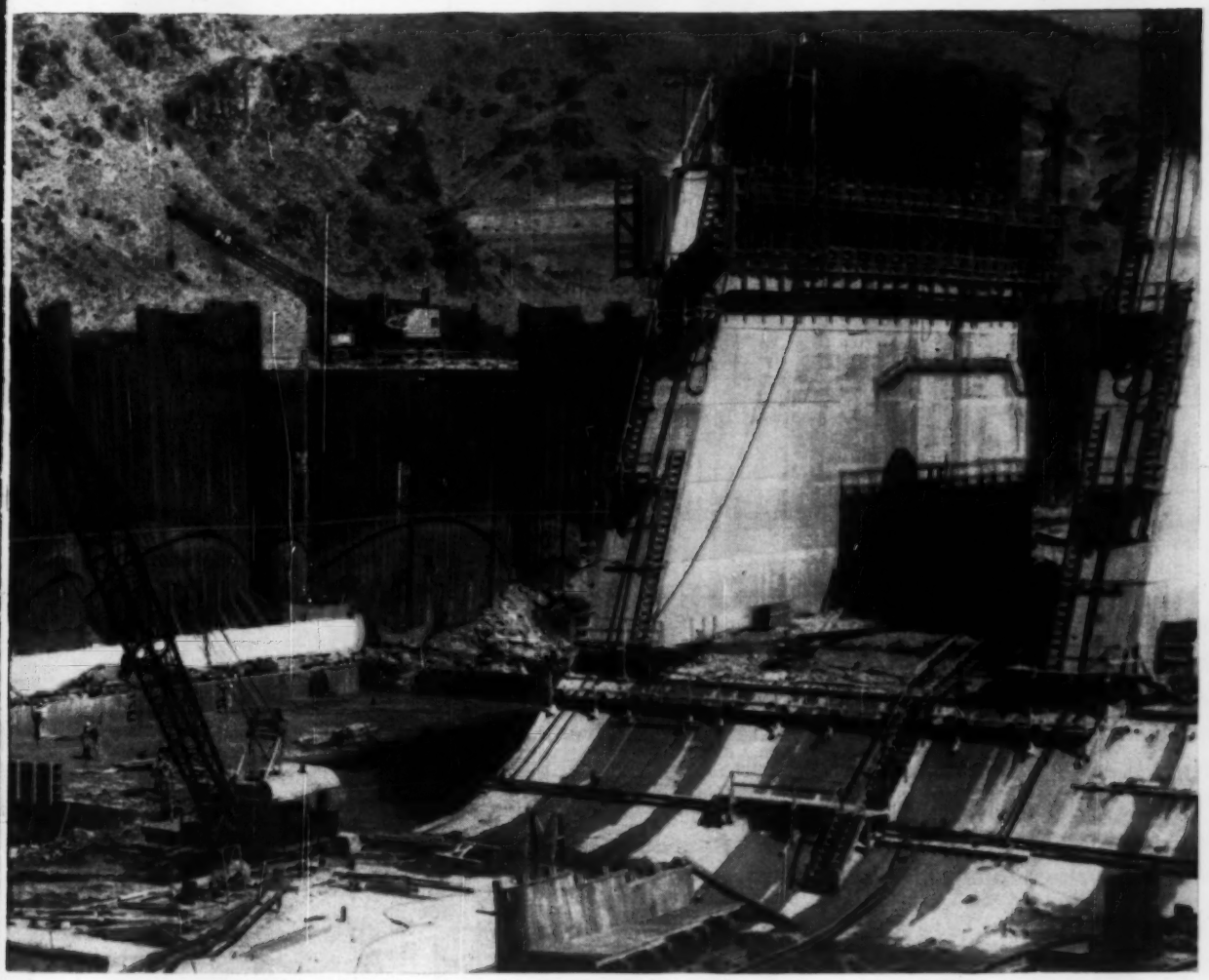


Rocky Reach Hydroelectric Project, Public Utility District No. 1, Chelan County, Wenatchee, Washington. Ultimate capacity: 1,200,000 kilowatts; Length of dam: approximately 5,000 feet, including 2,000 feet water-impervious earth cut-off; Height of spilling from bedrock: 127 feet; Normal pool area: 9,000 acres.

Designers and Engineers: Stone & Webster Engineering Corporation

General Contractors: Rocky Reach Dam Builders (a joint venture of four widely known firms). Pile Driving Sub-Contractor: Lebouef and Dougherty Construction Co., Richmond, California

USS MZ Piling of the type used for permanent cut-off walls to obtain high beam strength.



delivered on time for quick erection at Rocky Reach Dam, Washington

The new $273,100,000 Rocky Reach Hydroelectric Project near Wenatchee, Washington, needed steel sheet piling to start the project before the beginning of the annual flood stage of the Columbia River. Five thousand six hundred tons of steel sheet piling was made in Pittsburgh and delivered on time.

The USS Steel Sheet Piling was used to construct a portion of the 24-cell cofferdam, upstream and downstream cut-off walls and east abutment dam. The cofferdam was built in 103 days, or one cell every 4 working days. For this, USS MP-101 straight-web piling, driven to solid rock for maximum strength in tension, was used. Lebouef and Dougherty Construction Co., pile driving sub-contractor, states that the sheet pile interlock sizing was excellent and the piling placed without difficulty.

The cut-off walls were built with USS MZ Piling for maximum beam strength. These were also driven to solid rock for a permanent installation.

This is another case that illustrates the excellent cooperation on deliveries made possible by U. S. Steel's large production facilities and attention to customers' needs. When you want any type of piling—steel sheet or H-beam bearing piling—get in touch with the United States Steel office near you.

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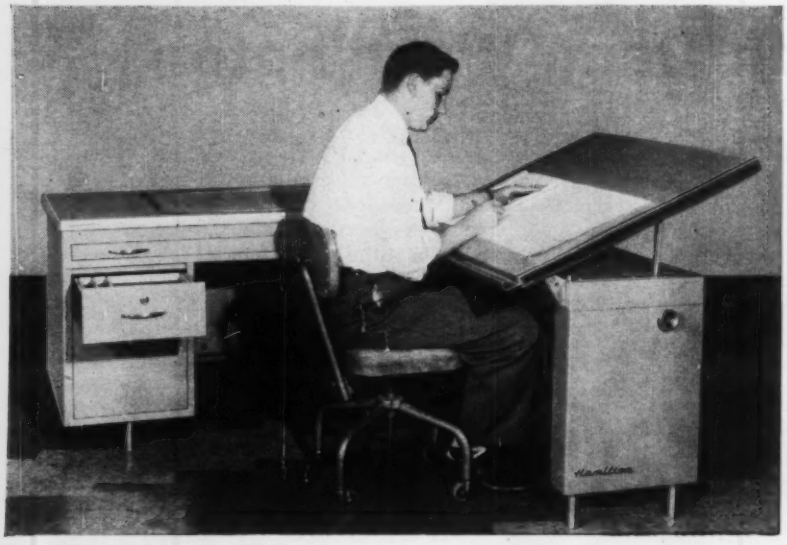


Reader Comment

Getting Consulting Jobs

SIR—Referring to the editorials in your Mar. 6 issue: Is there something wrong with a consulting engineer going over the head of a state highway department to seek the help of the commission and the governor in getting a design job? Is there any reason why the commission and the governor are not as reliable to select an engineering firm as the highway department?

And isn't something wrong with a state highway department that does not give out design work, only because it hasn't the sole and unquestioned selection of the engineering firm?

ROBERT M. YOUNGS, JR.
Sea Girt, New Jersey

Contractor Chose Welding

SIR—Your story in the New York School of Printing (ENR Feb. 6, p. 28) contains a slight inaccuracy.

Welding of the steel frame was the contractor's option, and the selection of this method of making field connections had nothing to do with the matter of vibrations.

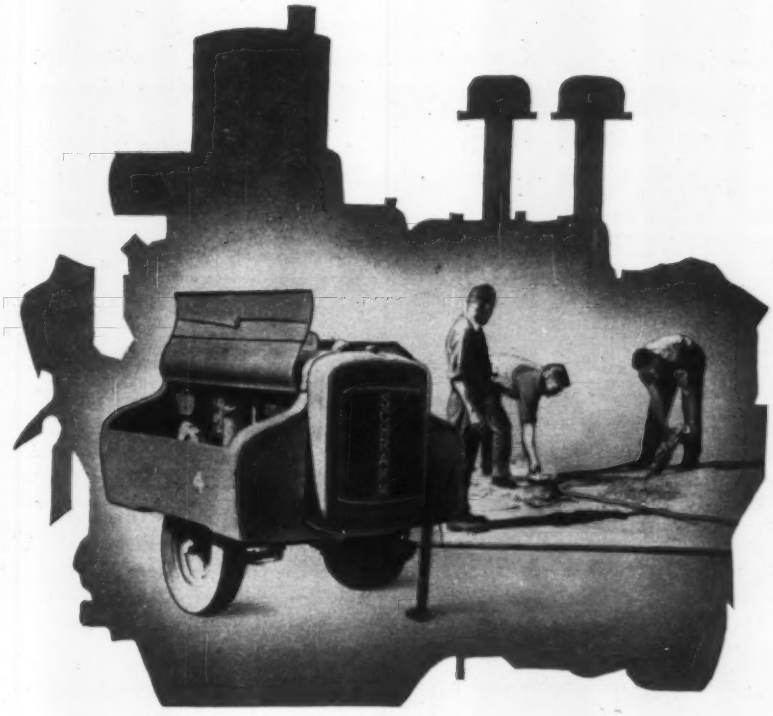
However, as your story indicated, the provision of certain shear walls, slabs of minimum 5½ in. thickness, concrete encasement of columns, etc., were made with the problem of equipment vibrators in mind.

MICHAEL ALEXANDER
Associate Engineer
Severud-Elstad-Krueger-Associates
New York, N. Y.

Realistic Planning

SIR—I wish to extend my compliments on the short but timely editorial on "Realistic Planning". In this connection I recently tried to be "realistic" in making the following comments, quoted in part from our yearly report of activities in the Kansas City Park Department: "Regretfully, we must discard some of our park planning concepts of the past as today's trend and economy dictate a complete revision in our thinking, scaled to match availability

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.



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JOINT IS TIGHT

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You keep your schedules with Bell-Tite Joint cast iron pipe. It can be easily laid in a wet trench or even under water.

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CLOW Bell-Tite Joint pipe is strong, tough, uniform and durable cast iron pipe for long-life underground service.

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Available in any specified thickness or weight class in accordance with ASA, AWWA or Federal specifications. 3″ to 24″.

CLOW Bell-Tite Joint is easily assembled—Just wipe clean, lubricate and push spigot into the bell. When painted yellow stripe is no longer visible, joint is bottle tight.

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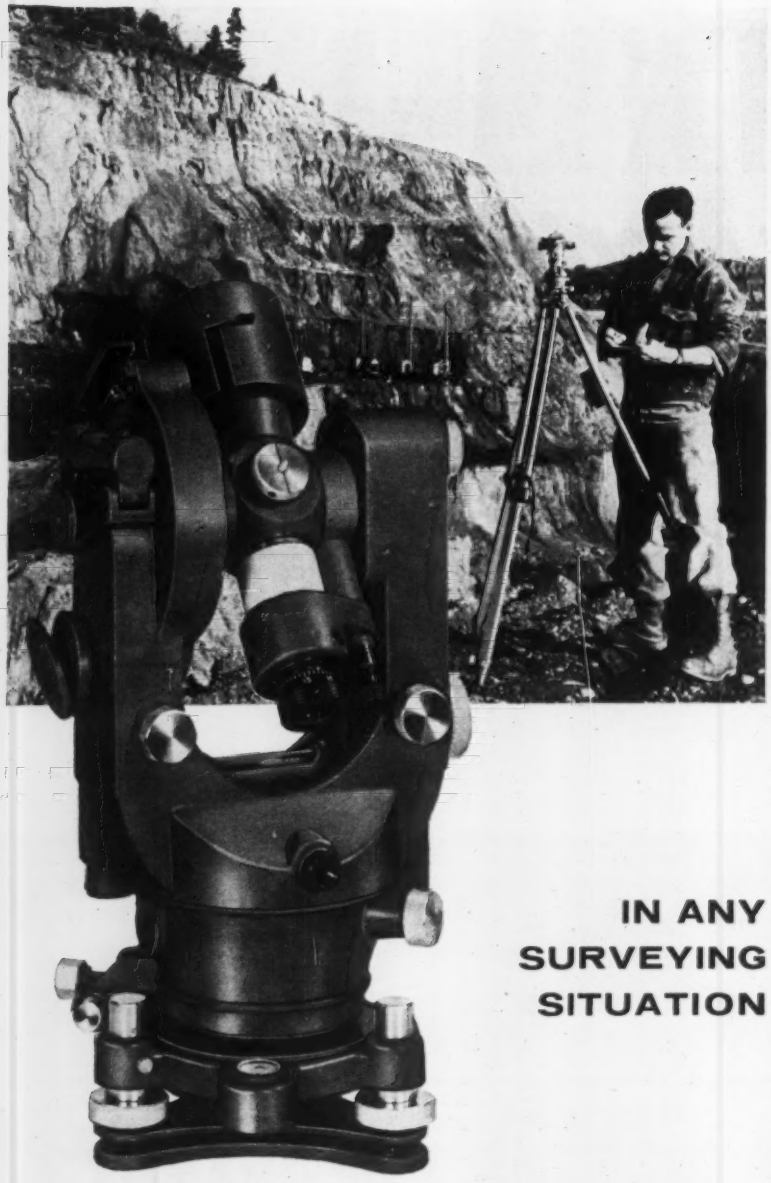
It is the combination of these characteristics that makes Brixment the leading masonry cement for concrete block as well as for brick.

Louisville Cement Company . . . Louisville 2, Kentucky



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and capability of our fund balances. As example, there is no denying the desirability of the scenic and wondrous beauty of the winding park boulevard of divided roadways with fully landscaped and beautified central panels, but, to bring such a facility to realism we are challenged by many factors created by today's high standards and costs, that all but preclude our possibilities of bringing such things to pass.

"Today, municipal revenues, nationwide, are severely taxed to perform even the most essential of services, and without some form of relief or subsidy it is sheer waste to plan or envison elaborate facilities to be financed on the municipal tax level alone.

"We cannot, and should not, accept promiscuous, gold plated, and unfounded planning which leads to nowhere. A pretty picture, well delineated and fully embellished, can well lead us astray unless fully and logically analyzed.

"In this instance let us again refer to the traditional divided roadway boulevard. Does it seem logical or good planning to be proponents of such a facility without reasonable assurance of adequate funds for consummation of the total plan?

"Again, would it seem rational to plan or foster such an improvement without good assurance of full use and general value? To build a thing of beauty for passing approbation is well, but in this era of making every dollar count, we cannot tolerate duplication, repetition or other wasteful practices."

In my opinion, the planners could avoid some of the "dream world" through closer contact with the "down to earth philosophy" of the civil engineer.

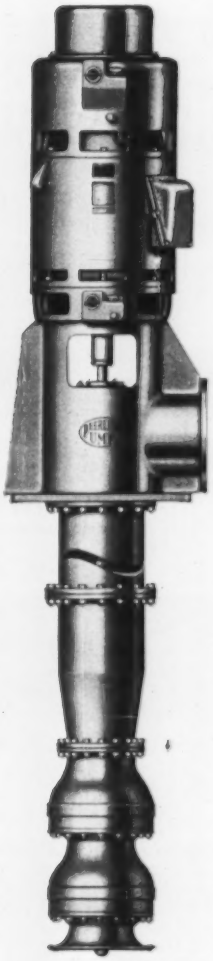
HOLLAND WHEELER
Asst. Supt. of Parks,
Board of Park Commissioners,
Kansas City, Mo.

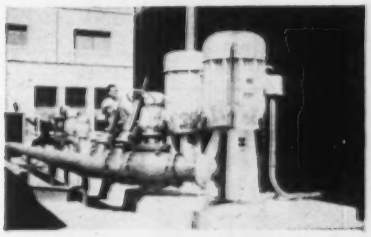
Bridge Deflections

SIR—Your editorial "Is That Test Necessary?", opposing the test loading of bridges in Europe, states that the computed and actual deflections "are never far enough apart to matter" (ENR Jan. 23, p. 128).

Deflection and vibration measurements of 34 spans of 15 bridges of simple, continuous and cantilever types, of the Michigan State Highway Department, published by LeRoy T. Oehler in July 1957, disclosed 100% higher ratio of actual deflection to theoretical deflection for spans designed for composite action compared with those designed without it.

These measurements indicated also that the present deflection limitations





mark of distinction

As the Northwest Indians told their story with totem poles, Peerless Pump dramatizes theirs in terms of outstanding performance. An example is the Peerless vertical industrial service pump. Versatile and economical, these pumps offer excellent head-capacity characteristics, plus other measurable advantages such as: *advanced vertical turbine design* for peak efficiency, *designed-in flexibility* for adaptation to future system requirements, *vertical pump-motor design* for maximum utilization of floor space. Available in water and process liquid handling types, the Peerless vertical industrial service pump can be applied to all installations where liquids are to be transferred from short settings.

WRITE FOR BULLETIN NO. B-505

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HOME BUILDERS' SEWAGE TREATMENT GUIDE

If you run off sewage into this type of waterway →				
health authorities require this type of treatment →	PRIMARY TREATMENT (35% B.O.D. Reduction)	INTERMEDIATE TREATMENT (70%-75% B.O.D. Reduction)	COMPLETE TREATMENT (80%-95% B.O.D. Reduction)	
consulting engineers recommend this type of treatment system →	SPIRAGESTER	CAVITATOR	TRICKLING FILTER	HI-CONE AERATORS
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relative first cost of the complete system will be →	LOW	LOW	HIGH	MEDIUM
the advantages of each type are →	• Economy • High Settleable Solids Removal	• Economy • Relatively Clear, Odorless Effluent	• Reliable Performance and Simple Operation	• Highest Degree of Treatment • Rugged Construction

Yeomans will gladly work with your engineer on your sewage treatment problems.

YEOMANS Manufacturers of: pumps for drainage • sewage • condensation return • water supply and circulation • equipment for treatment of domestic and industrial wastes.

Please send information on sewage treatment systems for the following number of homes_____. My consulting engineer is

Mr._____

_____ (city)

YEOMANS,
1999-1 N. Ruby St., Melrose Park, Illinois

name_____

company_____

street_____

city_____ zone_____ state_____

of the AASHO design specifications when applied to the design of simple, continuous and cantilever type bridges do not result in equitable stiffness of the various types of structures. Especially, a thorough study of means of controlling the susceptibility to vibration of the cantilever type bridge was indicated by these measurements. The measurement of the torsional deflections and torsional vibrations of skew bridges is in the interest of equitable design.

Differences between computed and measured deflections lead to improved design methods in Europe. Bridge measurements should become a standard practice for the improvement of design methods in the United States.

LOUIS BALOG
Consulting Engineer
Binghamton, N. Y.

Fast Tunneling

SIR—From Shaft 3 of the 13 ft 2 in. dia West Delaware Tunnel, during a five-day period between February 24-28, we excavated an average of 83.2 ft daily in the west heading and 81.8 ft per day in the east heading. Also, for 31 consecutive working days beginning January 17, we mined an average of 70 ft daily in each heading. Rock encountered was mostly medium grey sandstone in horizontal laminations.

We believe these footages are records for comparable size tunnels. The tunnel is being driven for the New York City Board of Water Supply.

R. P. KING
Chief Engineer
Drake-Grafe-Winston-Tecon-Conduit
East Branch, N. Y.

EDITOR'S NOTE: The D-G-W-T-C claim appears valid. The best daily advance for a comparable sized tunnel we can find is 80 ft a day over seven days made in 1955 on the North of Scotland Hydro Board's Glen Almond Tunnel, a 10 ft horseshoe.)

CALENDAR

Western Association of State Highway Officials, 37th annual meeting, Hotel Utah, Salt Lake City, Utah, June 3-6.

National Society of Professional Engineers, annual meeting, Chase-Park Plaza Hotels, St. Louis, Mo., June 11-14.

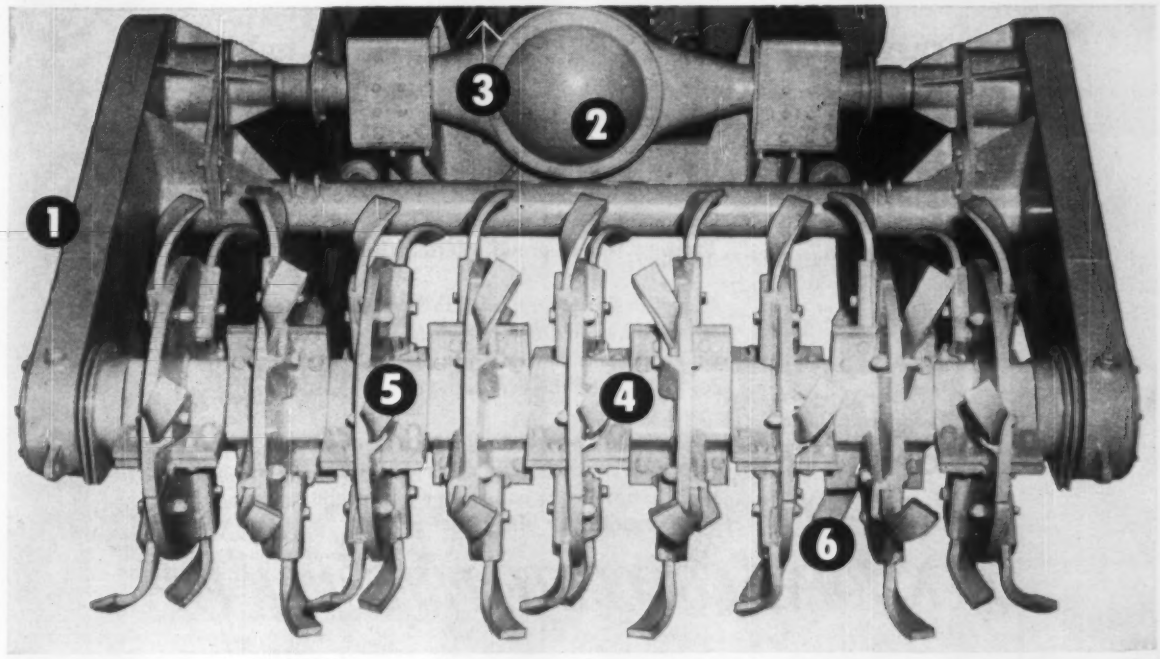
American Society for Testing Materials, 61st annual meeting, Hotel Statler and Sheraton Plaza Hotel, Boston, Mass. June 22-27.

American Society of Heating and Air Conditioning Engineers, semi-annual meeting, Pick-Nicollet Hotel, Minneapolis, Minn., June 23-25.

American Society of Civil Engineers, Multnomah Hotel, Portland, Ore., June 23-27.

American Institute of Architects, annual convention, Hotel Cleveland, Cleveland, Ohio, June 7-11.

If you are doing Soil Stabilization work, you know why this design is so important



The BROS Roto-Mixer's performance during the past two construction seasons has been sometimes described as truly amazing. If you know in-place soil stabilization machines and jobs, as you review the design features below, you'll readily understand why.

CUTS MIXING TIME

1. Because drives are at outside ends of the rotor shaft, even mixing is accomplished in one pass. No need of a second pass to provide uniform mixing.

Full width mixing or any increment up to 7′ is easily handled. Split-disk type tool plates are quickly removed for shoulder maintenance or other narrow work.

2. Three-speed transmission and 150 usable HP at 1800 RPM provides a greater range of mixing speed . . . and mixing control which eliminates "surging" effect.

3. Independent hydraulic control of rotor and hood provide ample space for proper mixing to 12″ depths. Materials are uniformly blended in a smooth, even course.

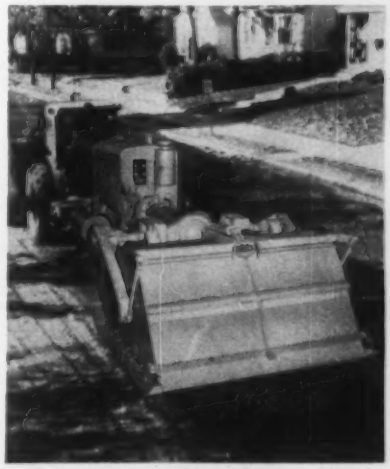
CUTS MAINTENANCE COSTS

4. 6″ square solid steel rotor shaft easily withstands shocks and strains of in-place mixing of rocky soils.

5. Split-disk type tool plates are of heavy-duty construction; quickly and easily removed or remounted.

6. Simplified tool holders. Heavy-duty mixing tools are socket mounted, held by one bolt. Replacing worn tools is done in minutes.

You'll be glad to learn of the other important design and construction details of the Roto-Mixer. So see your nearest BROS Distributor for full information and a demonstration. Or write us today.



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It fits in our budget with greatest of ease,
With savings at which no smart buyer can sneeze,
Low cost plus long life and best service he sees
Mean premium pipe at low pay.

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Designed for what pressure or backload we please,
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It goes in the ground with the greatest of ease,
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No caulk, bolt or weld—installation's a breeze,
And backfilled the very same day.

It carries full pressure with greatest of ease,
Corrosion and tubercles never displease,
High maintenance costs never put on the squeeze
With uncalled for bills to defray.

LOCK JOINT CONCRETE PRESSURE PIPE *for this* QUARTET!

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It fills all our needs with the greatest of ease,
It's thrifty yet safe everybody agrees,
No wonder we all say, "No substitutes, please!"
When Lock Joint's the best pipe to lay.

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THE CONSTRUCTION WEEK

THE MERRY, MERRY MONTH OF MAY!—With one more contract week to go, May looks like a very safe bet to top April and thus become the fifth consecutive month to show a rise in heavy construction contract volume. May's stepped up volume of awards reflects a well balanced heavy construction market—state and local, federal and private contracts all show a hefty rise over April rates.

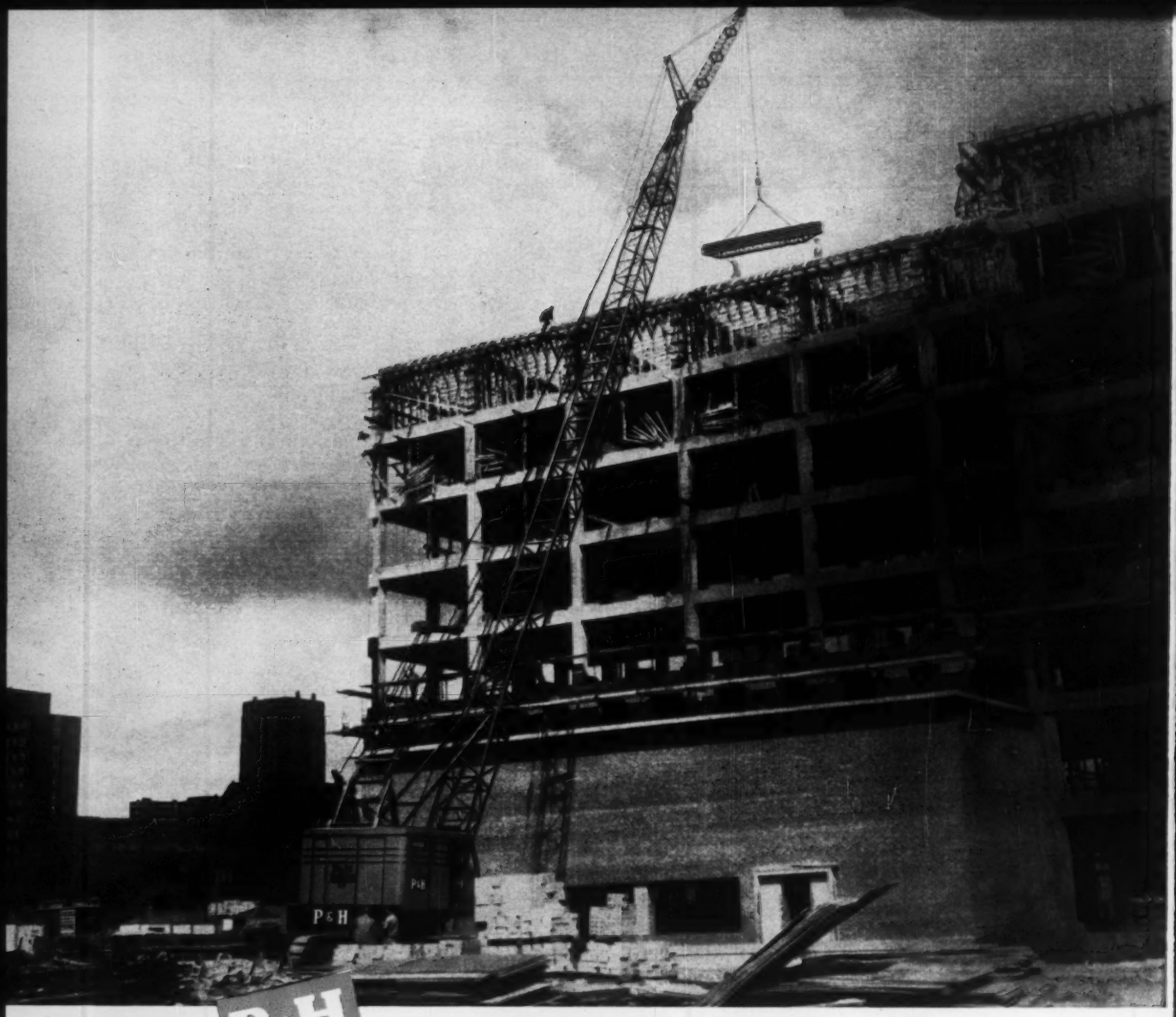
$10 MILLION ON THE TABLE—Heavy construction circles were buzzing with speculation this week over a $32.4 million apparent low bid for Niagara Power Project work that was left $10.1 million below the second bid. At press time, the New York State Power Authority was still studying the unit prices and had not received word of any error from the low bidder, a joint venture of Edward Balf Co., Savin Brothers, Inc. and D. W. Winkelman Co. Six other bidders on this section of covered conduit spread between $42.5 million and $50.8 million.

STARTING SALARIES—Labor Secretary James P. Mitchell says starting pay for next month's engineering graduates will average only slightly above the $435 a month of last year. And he implies employers are looking at grades as he says: "Men graduating near the top of their class will still be actively sought after."

THE NEXT DECADE—Engineers Joint Council did some crystal-ball gazing in Chicago on Monday as it met in a regional conclave with the Western Society of Engineers. It was billed as a look at the next 10 years in engineering. Prospects for the long-proposed survey of the engineering profession were described: It will be costly, comprehensive and best performed by a commission type of organization using a task force to study into each major field of engineering. As yet, there's no timetable for start or finish of the survey.

RESEARCH: BIGGER AND BIGGER—If any further evidence were needed on the growth of research activities, here it is: From Chicago comes word that 26 leading educational and research institutions have joined to form a corporation to be known as Associated Midwest Universities. It will be a "not-for-profit" venture with headquarters at Argonne National Laboratory's Lemont (Ill.) site.

SEVEN MILLION DOLLARS TO GO—The United Engineering Fund, an organization campaigning for a $10 million United Engineering Center in New York City, has revealed it now has slightly over $3 million in contributions. The effort is under way to raise $3 million among individual members of societies interested in the new headquarters building. And $5 million has been the goal from industry.



"With P&H we saved buggying concrete 2 floors"

At the job-site of an 11-story Chicago hospital, operator Bob Michael was asked about the performance of this rugged P&H 50-ton capacity crawler crane. He said,

"After the 7th floor, the boss figured on buggying concrete. We're already pouring on the 9th because this rig's got the speed and lifts higher. I like these big brakes and smooth hydraulic controls. I can 'feel' the load right in—spot quicker—even in 'blind' spots."

Other features Bob Michael likes about the "855" is the P&H planetary boom hoist which raises and lowers the boom under power. It gives him the ¼ inch he needs for real precision work. And with the P&H live roller circle, he can swing right along with the men as they keep their hands on the concrete bucket and pour.

For high and heavy lifting, no other machine in the 50-ton class can match the workable capacity, speed, stability and accuracy of the P&H 855B-LC with long crawlers. That's why when owners and operators get together they agree on P&H!

SAYS Bob Michael, operator of 50-ton P&H 855B-LC.

HARNISCHFEGER

Construction & Mining Division
Milwaukee 46, Wisconsin

WASHINGTON OBSERVER

- Override of rivers and harbors veto promised
- Officials scrutinize housing upturn
- Governors are cool to tax-power offer

● **Congressional backers of the $1.7 billion rivers and harbors authorization bill now say they have the votes to override a Presidential veto.**

They claim they already have the necessary two-thirds of the House, and are merely biding their time in the Senate. The proponents say that all they need is three more senators—and they see it as an easy job to get three more to come their way before this session ends.

Odds are against any of these projects getting any construction money to start work in the regular public works appropriation bill this year. None of the backers claims, of course, that the bill is needed to combat the recession. Republicans are willing to vote to override the President with one eye on the fall elections. They see little risk in going against the President on this issue. And they are firm believers that it pays at the polls to be identified with a public works project for their state or their district.

● **Administration housing officials are keeping a close eye on the housing upturn.** They have a directive from the White House to watch the pickup in housing to see whether the $1 billion special assistance money for purchase of mortgages is pushing prices upward or having an otherwise bad effect on any other part of the economy (see page 98).

The President had this in mind: That the housing upturn, when it came, might catch the economy on the upswing, too, and give an unwanted shot of inflation at the wrong time. So far, of course, there's no sign that this is happening.

There's no inclination to hold back any of the $1 billion earmarked solely for federal financing of new VA and FHA starts.

Mortgage commitments under the program are skyrocketing, week after week. Last week was the biggest of the six weeks since the program began: FNMA committed itself to 3,643 mortgages worth more than $44 million. There's every sign—from the flood of applications coming in—that the rise will continue until the $1 billion is exhausted, or the Administration stops it.

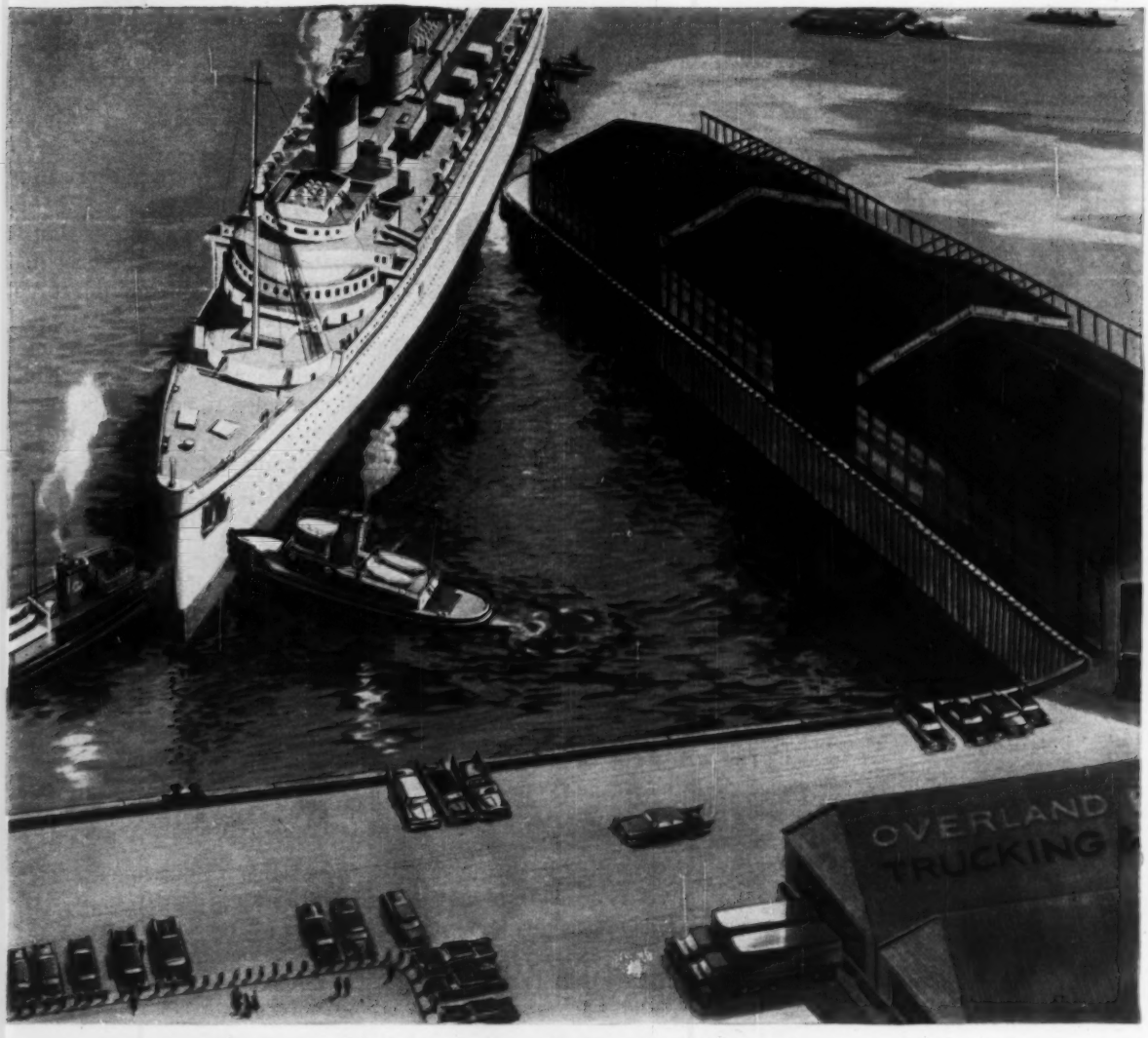
● **A barrage of criticism showered down this week on the expected White House request to Congress to discontinue the $50 million a year in federal grants** to cities for constructing sewage treatment works. The Administration wants the states to finance the program after next June 30.

President Eisenhower wants Congressional approval to turn over some $150 million a year in federal telephone tax revenues to the states—which would then take over sewage construction and several other federal grant programs.

The American Municipal Association, representing the nation's mayors, is against the idea—told Congress it fears the program will bog down if the federal government steps out of the picture.

Democratic governors, at the annual Governors Conference in Miami, came out against the idea, too. They say some state constitutions don't permit use of such taxes for such construction. And in general, they feel that they will be better off under the present federal program, especially if Congress increases the size of the program as it may do soon.

MARINE FENDERS



Takes Rock and Roll without a Toll!

An ocean liner is brought alongside the dock. What if her immense tonnage is pressed a bit too hard by the wind or tide? That could mean heavy damage to the ship and the dock. That is, unless the dock is equipped with U. S. Rubber Marine Fenders.

These rugged shock absorbers stand up to the most crushing batterings, impacts and squeezings. They are perfect cushions that protect docks and ships against impact loads; also used as mats on tugboats, as bumpers on loading platforms, as guard posts in parking lots.

SEND for our technical catalog. It contains marine fender dimensions, shock absorption data and other engineering facts which enable the engineer to write in marine fender specifications and materially reduce construction costs, both new or for modernization. Write Department ENR, Mechanical Goods Division, United States Rubber, Rockefeller Center, New York 20, N. Y. In Canada, Dominion Rubber Co., Ltd.

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See things you never saw before. Visit U. S. Rubber's New Exhibit Hall, Rockefeller Center, N. Y.

This summer—and every summer—more and more of . . .

Construction's Engineers Go to School

Classrooms and blackboards, instead of construction sites and planning boards, will be the daily destination of many of construction's engineers during the next few months.

The reason: Universities throughout the country are attracting them with special summer programs designed to bring engineers up to date on the latest technological developments in their fields.

• **Something for everybody**—Courses and seminars in the civil engineering field run the gamut—from analysis of waste treatment facilities to design and construction of earth embankments; from urban planning to digital computer applications.

Some programs are designed specifically for management; others help personnel to advance their job standing; still others are for research engineers who seek new construction materials and methods.

There will be classes conducted by university professors, seminars that feature guest lecturers from industry, and conferences during which participating engineers will have an opportunity to present papers. Programs range in time from one day to six weeks in duration.

• **Reason for being**—In recent years, industry has become increasingly aware of the need for technical personnel to keep abreast of the latest design, construction and materials technologies. Advanced study for engineers is becoming a "must." Formal university courses, however, are often impractical for the working engineer, and time for self-study is difficult to come by. The result has been a mushrooming of the demand for concentrated extracurricular education for professional people.

Universities, always alert to develop off-season teaching activities for the faculty, are helping to meet this demand by establishing special summer extension services. Some schools have developed comprehensive programs that offer short courses in almost every field of engineering and science. For example:

Massachusetts Institute of Technology (which began its summer programs nine years ago) last summer had 2,000 participants; this year MIT will offer 23 special summer programs.

Pennsylvania State University has 18 such classes scheduled.

New York University has established a university office of special services to business and industry so that it can better accommodate professional people in planning summer programs.

• **Who goes**—About 60% to 70% of engineering registrants for summer programs are expected to come from private industry—from consulting offices, contractors' equipment firms and industrial companies. The rest are from government agencies and research and educational institutions. Non-university construction industry personnel also participate as lecturers.

A few of the participants enroll on their own initiative and time. But most engineers are sent, and have their enrollment fee paid for by the organization that employs them. The average summer-program student, according to univeristy registrars, is a man with about 10 years of experience who holds some sort of managerial position.

The subject matter of a course may be selective and cater to people within the particular university area—such as the one week Highway Management Conference being held at the University of Kentucky at the request of the State Department of Highways. This class is designed specifically for the department's administrators.

Programs that deal with highly specialized subject matter of wide interest will draw national and even international attendance. To attract enrollment in such courses, the universities rely on mailing lists, advertisements in national magazines and "word of mouth."

Courses such as the one offered by West Virginia University for water and sewage plant operators, or Virginia Polytechnic Institute's six week course in surveying and mathematics, attract technicians interested in bettering their job status.

(*Continued on page 22*)

. . . Courses galore are offered by colleges trying to keep their faculties working

Following is a representative list of courses available this summer that are of interest to engineers in construction. More detailed information may be obtained by writing to the colleges and universities.

University of Arkansas—Fourth Summer Institute on Urban Planning, basic seminar Aug. 18-29, advanced seminar Aug. 25-29, $100 and $75, respectively. Fayetteville, Ark.

California Institute of Technology—Supervision of Engineers, June 22-27 repeated Sept. 14-19; contact Milton Gordon, Associate Director, Management Development Center, California Institute of Technology, Pasadena, Calif.

Yale University—Introduction to Computer Methods for highway and traffic engineers, July 7-19, $150; contact Director, Bureau of Highway Traffic, Strathcona Hall, Yale University, New Haven, Conn.

University of California—Fundamentals of Traffic Engineering, Aug. 22-29, $35; contact Institute of Transportation and Traffic Engineering and University Extension, University of California, Berkeley, Calif.

State University of Iowa—Seventh Hydraulics Conference, concerns model-prototype relations, June 16-18, Iowa City, Iowa.

University of Kentucky—Highway Management Conference, designed for management personnel in state highway department, July 14-20, Lexington, Ky.

Massachusetts Institute of Technology—The Design and Construction of Earth Embankments, Sept. 2-12, $250.

Cavitation Mechanics in Engineering Practice, July 8-18, $250.

The Dwelling House—an Emergency Technology, surveys present status of design, construction materials distribution, regulatory bodies and labor practice, June 23-July 3, $250.

Air Pollution, dealing with causes, effects and control of air pollution, Aug. 11-22, $250.

City and Regional Planning, covers recent trends in comprehensive planning and urban renewal, July 21-Aug. 1, $200.

Contact Office of the Summer Session, MIT, Cambridge 39, Mass.

University of Michigan—Technical Writing, for engineers whose professional work includes technical writing and speaking, June 16-20.

Introduction to Digital Computer Engineering, for persons who have a basic engineering or mathematical background, but little or no computer knowledge, June 16-27.

Introduction to Standard Methods of Numerical Analysis, June 16-27.

Advanced Numerical Analysis, will cover recent experimental and theoretical work in the areas of large-scale linear systems, determination of characteristics, values and vectors, and numerical solution of ordinary and partial differential equations. June 16-27.

Contact Coordinator of Engineering Summer Conferences, 2038 Engineering Building, University of Michigan, Ann Arbor, Mich.

Manhattan College—Bio-Oxidation of Organic Wastes, Theory and Design, June 16-20, $100, contact W. Wesley Eckenfelder, Civil Engineering Department, Manhattan College, New York 71, N. Y.

Pennsylvania State University—Automation Seminar, involving latest techniques in designing and controlling continuous automatic-production equipment, June 8-13, $60.

Industrial Training Workshop, directors who must determine training needs within their organization and develop programs for filling these needs, June 8-13, $60.

Creative Engineering, designed to stimulate creative thought in various fields of engineering; "company" problems will be discussed in class, June 22-27, $60.

Materials Engineering Design for High Temperature, summarized information on mechanical properties of materials at elevated temperatures; will show how this information can be interpreted and utilized in design, June 29-July 3, $60.

Mechanical Properties of Materials, includes methods of testing, and interpretation and correlation of test data, July 6-11, $60.

R&D Management Development, designed to help research and development project leaders develop skills in administration, July 6-11, $60.

Technical Report Writing, instruction in preparation of effective technical reports, Sept. 14-26, $90.

Introduction to Computer Programming, describes the techniques of formulating a problem for an automatic computor, June 15-20, $60.

Virginia Polytechnic Institute—Annual summer course for employees of state highway department, six weeks. Annual summer course in sanitary engineering designed for operating personnel in municipal water and sewage plants, three or four days. Department of Civil Engineering, Blacksburg, Va.

West Virginia University—Short course for water-plant operators and sewage-plant operators. College of Engineering, Morgantown, W. Va.

• **What's available**—Selections of summer sessions in universities are determined by the expressed needs of industry and the availability of qualified instructors for specialized subjects. Most universities are willing to offer any summer courses for which demand makes itself manifest.

Size of classes varies according to the nature of the subject matter taught and the method of teaching employed; they range in size from 20 to about 250 students. Limitations are set on the size of classes when necessary, to avoid crowding.

Fees for summer courses run between $50 and $250.

A summer program may include class instruction, lectures by experts in the field, laboratory visits and field trips. MIT's class on the design and construction of earth embankments, for example, provides for mornings to be devoted to lectures and afternoons to discussions and laboratory visits—including a trip to the Corps of Engineers Arctic Construction and Frost Effect Laboratory, which is nearby.

Atom Money Fight

Democrats would double President's $193 million nuclear construction bill

The Eisenhower Administration is asking Congress for $193 million for new atomic plant and equipment. But Congressional Democrats, who favor more federal construction of atomic power reactors, may force another $200 million or so on the Republican-run Atomic Energy Commission.

The Democrats profess surprise and indignation at the recently submitted AEC authorization bill for the fiscal year beginning July 1.

The proposed measure would authorize only one new large reactor, a $51 million gas-cooled, graphite-moderated prototype fueled with partially enriched uranium. Its capacity would be 40,000 kw and even this project would not be built by the government until private industry has a chance to turn it down.

Conspicuously missing was any mention of two other reactor projects favored by Congressional Democrats: a plutonium-producing reactor for which a design study already has been carried out, and a heavy water moderated prototype burning natural uranium.

Publicly, Democrats like Rep. Chet Holifield and Sen. Clinton Anderson call the Administration proposal "disappointing" and "grossly inadequate." Actually, they are hopping mad over

what they regard as a doublecross by the Eisenhower Administration.

They say that, in private talks between AEC and the Joint Committee, a compromise agreement had been reached which should have averted the usual bitter Congressional fight between those who favor federal reactor construction and those who feel the job should be left to private industry.

Under the reported pact, AEC agreed to build both the gas-cooled and heavy water moderated reactors—and possibly the plutonium producer, provided it was not hooked up for power production.

AEC sources contend that the agreement was never as firm as the Democrats contend—but that, in any event, AEC Chairman Lewis Strauss did his best in behalf of the pact, only to be overruled by the Budget Bureau.

Democrats take this explanation with the proverbial grain of salt, although there's no doubt of the Budget Bureau's refusal to go along with the agreement.

At any rate, the conviction is strong on Capitol Hill that the Joint Committee, which had planned to forego a more ambitious reactor building program this year while a long-range program was hammered out, now will end up reporting a bill that goes far beyond the Administration request.

The Joint Committee is expected to vote construction of a $126 million special plutonium-producing reactor at AEC's Hanford, Wash., installation. Of more worry to electric utilities, the Democrats may go further and propose that power generating facilities with a capacity of 300,000 kw be hooked onto the reactor.

The obvious question is: Can the Democrats push their program through Congress? Neutral observers give the edge to the Democrats.

• **Firm projects**—Regardless of the outcome of the fight over big federal reactors, the final law is apt to contain authorization for these projects proposed in the Administration bill:

• Modifications to three experimental AEC reactors: the organic moderated reactor experiment, experimental boiling water reactor and the boiling water experiment. Total: $6.3 million.

• Heavy-water component test reactor, $8 million.

• Construction and equipping of addition to the Fuels Technology Center, Argonne National Laboratory, Ill., $5 million.

• New radioactive waste storage facilities at Arco, Idaho, $3.2 million.

• Weapons production and development plants, at undisclosed sites, $10 million.

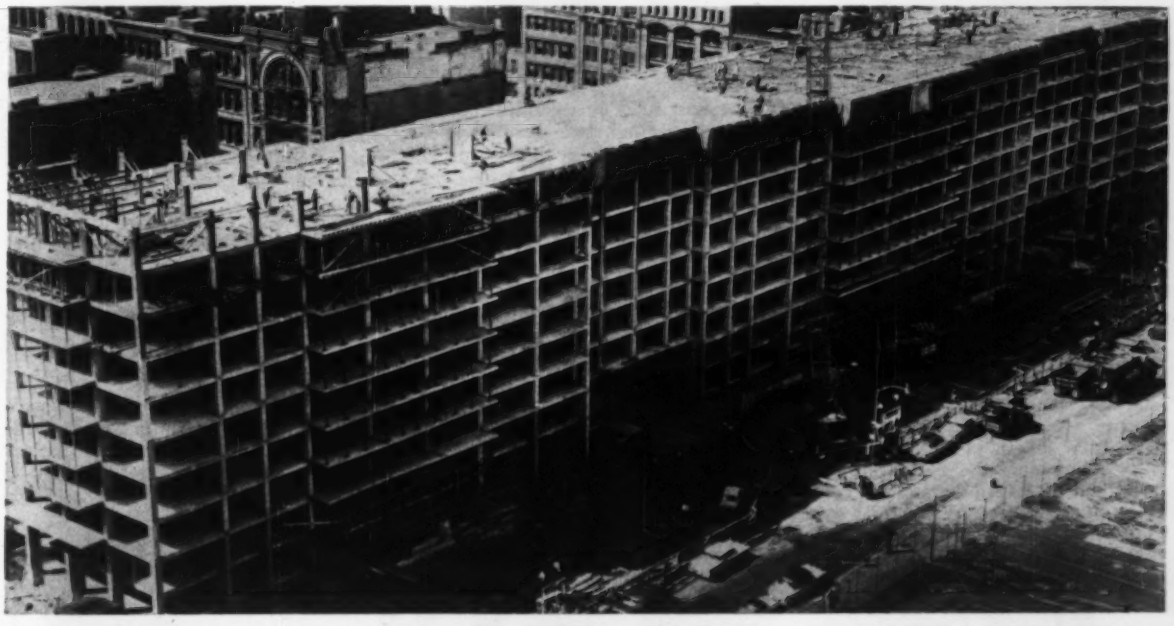
• Modification of fabrication plants for weapons components at Hanford, $3.5 million, and at Oak Ridge, Tenn., $12.5 million.

• Miscellaneous construction at the Nevada Test Site, $1.8 million.

• Reprocessing pilot plant, Oak Ridge National Laboratory, $3.5 million.

• Construction of hot cell facilities at various AEC plants, $5 million.

• Engineering and construction of a prototype packaged nuclear power plant for the Defense Deptment, $3 million, plus funds for non-nuclear components.



Apartment House Bridges Two City Streets

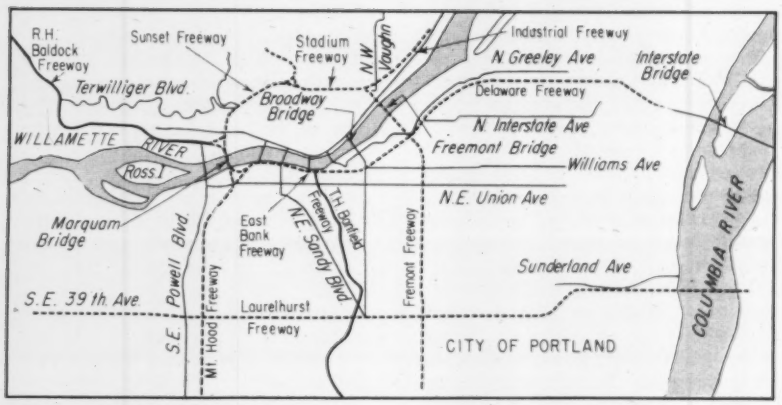
A 580 ft long apartment house now going up in New York City stretches over parts of three blocks but leaves intact the two streets it crosses. Steel trusses at the second floor span 51 ft to clear the roads.

It is the first of three identical buildings to be erected in Manhattan's $75 million Washington Square Village Title I development, begun last year. Photographed when construction crews had reached the 10th floor, the building will be 17 stories high and will contain nearly 700 apartments, including 16 penthouse units. It will be ready for occupancy this fall. The other two buildings will be completed one and two years later, respectively.

The two streets running through the building, Wooster and Greene, will serve as arteries within the 12 acre project site but will be closed to general traffic.

Framing the roof of each of the two arcades through the 63 ft wide building are four pairs of steel trusses, 10 ft deep and 14½ ft above the street. All other framing is reinforced concrete. Design loads imposed on the eight trusses by floors above total 3,500 tons.

The WSV Corp. is the developer of the project. Paul Tishman is builder in charge of design and construction. S. J. Kessler & Sons is the architect-engineer, and Paul Lester Wiener is the consultant on design and site planning.



EXPRESSWAY LOOP for Portland, Ore., will begin with $44.6 million East Bank Freeway. The system, when completed will encircle heart of city.

Urban Net to Cost $235 Million

State Highway Commission gives its approval to an immediate start on 15 year construction job

The Oregon State Highway Commission has given the green light to an immediate start on surveys and right-of-way acquisition for Portland's $44.6 million East Bank Freeway—first stage in a $235 million urban freeway network that will take 15 years to complete.

Designated as part of the interstate system, the East Bank Freeway will carry north-south traffic through the city along the east side of the Willamette River and will cross the river on a high level, fixed bridge that is a major part of the project. It also will serve as an arterial connection between the R. H. Baldock (Portland-Salem) Freeway and the Banfield Freeway which brings U. S. 30 into Portland from the east.

The total length of the East Bank Freeway, including the new Marquam Bridge, will be 3.42 miles and the completion of the project is set for 1963.

The approval to begin work followed unanimous endorsement at a public hearing held early in May of the river frontage route chosen in agreement by the Oregon Highway Commission, the Bureau of Public Roads and the City of Portland.

According to W. C. Williams, State Highway Engineer, the first construction contracts will be awarded on the Banfield-Morrison bridge section of the East Bank Freeway by midsummer 1959. Here a 12 block long section of the road will parallel the river at an elevation of 35 ft above mlw. A sloping concrete embankment will run from the edge of the road shoulder to the river. Completion and use of this section of the freeway is expected to be sometime in 1961.

Final design of the Marquam Bridge will be completed late this year, and the highway commission intends to let contracts in 1959 for some of the approach structures.

The East Bank Freeway will be a six lane divided highway. Lanes will be 12 ft wide, and the concrete median barrier will be 8.4 to 14 ft wide. Shoulders, 10 ft wide, will give the freeway a minimum total width in excess of 100 ft.

At its northern terminus the East Bank Freeway will make a temporary connection with Interstate Ave., present route of U.S. 99. Eventually an interchange will be constructed at this point to connect the East Bank with the Delaware Freeway leading north to the twin interstate bridges across the Columbia River, and with the proposed Freemont Bridge across the Willamette and in turn with the Sunset-Stadium Freeway to Portland's west side. The Sunset-Stadium Freeway will loop southward from the west approach of the Freemont Bridge to connections with both the Baldock Freeway and the Marquam Bridge. This done, Portland's central core will be encircled by expressways.

Final location of the Delaware Freeway will be set late this year and both right-of-way acquisition and contracting for structures are scheduled for 1959. By handling the major construction of the Delaware Freeway simultaneously with the last phases of the East Bank Freeway, the state engineers hope to complete both roads at about the same time.

Programmed to follow these two are the Sunset-Stadium route and the Freemont Bridge.

Last on the schedule is the Laurelhurst Freeway which will cut a straight swath through Portland's east side residential district. It will start at the Baldock Freeway south of the city, cross the Willamette River and run due north to a new bridge over the Columbia River. The estimated cost of this expressway is over $80 million with its urban sections costing $51 million and its rural sections costing $29 million.

Preliminary cost estimates for other segments of the Portland Freeway system, including engineering, right-of-way, grading, paving, and structures, are:

- East Bank Freeway, including Marquam Bridge: $44,682,000.
- Marquam Bridge-Sunset interchange: $20,766,000.
- Stadium-Sunset Freeway to Fremont Bridge: $25,176,000.
- Fremont Bridge and interchange: $25,104,000.
- Delaware Freeway: $21,056,000.

Completion of the Baldock Freeway from south of the Portland city limits to a connection with the west side Harbor Drive, now under construction, is a $16,827,000 project.

Two other freeways are in future planning, but not BPR-approved as are the others. They are the Mt. Hood Freeway, running east from the Marquam Bridge, and the Fremont Freeway, running east from the proposed Freemont Bridge.

Must Loosen Specs

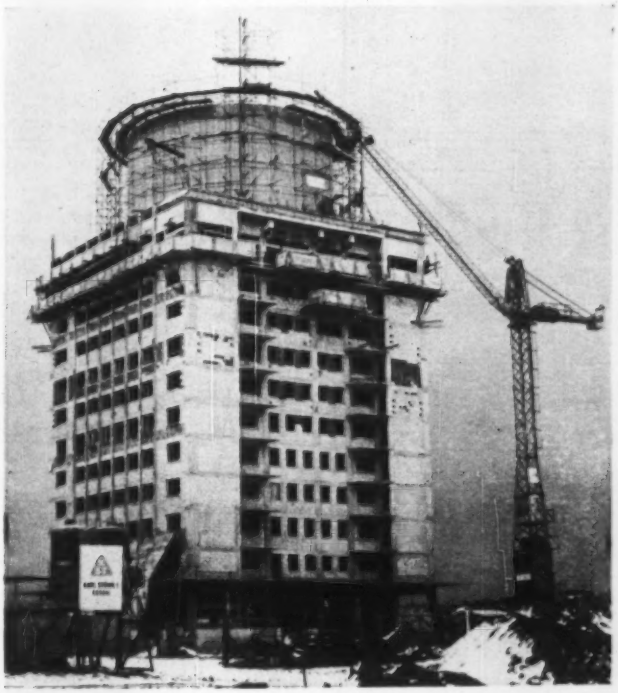
State road department cannot restrict concrete pipemaking method

The Florida Supreme Court has ruled that the State Highway Department cannot limit contractors in Dade County, Miami, to the use of vibro-cast concrete drainage pipe, which is consolidated using vibrators attached to forms.

Upheld was the action of Circuit Judge Hugh M. Taylor of Quincy, who in January, 1956, enjoined the road department from writing drainage pipe specifications that would restrict the contractor to use of so-called vibro-cast pipe. Expert testimony had shown there was not sufficient difference in the interior surface of vibro-cast pipe to affect flow.

The defendant contended that vibro-cast was smoother inside and permitted a greater flow of water, and was necessary because the low terrain in the county made design and construction of drainage facilities difficult.

The restrictive specifications were challenged by Associated Concrete Pipe Co., which manufactures its pipe by a machine method.



Twelve Story Apartment Building Surrounds a Water Tank

There won't be much of a courtyard view for occupants of the 77 apartments in a new project going up in Velbert, Germany, but at least the water tower will be hidden from the street—almost anyway—and won't require a separate site. The 12 story building completely surrounds the tank.

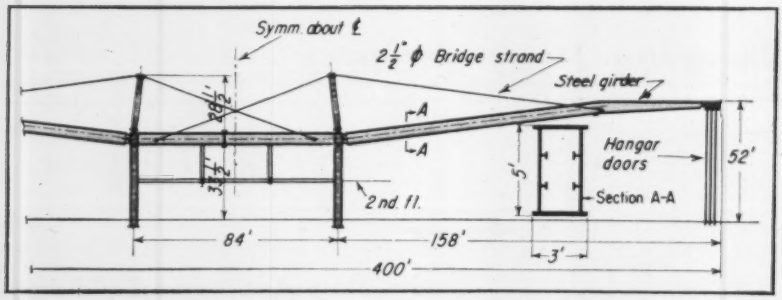
Muddy Tunneling Under Air

Bespattered English workmen tighten tunnel ring bolts in construction of the 4,688-ft-long Dartford-Purfleet vehicular tunnel under the Thames River. The $30 million project, started before World War II but abandoned because of hostilities, was reactivated last year and is scheduled for 1962 completion.

Sargent, Webster, Crenshaw & Folley photo

Span Removed for Seaway Navigation

The low-level Roosevelt Bridge across the South Cornwall Island channel of the St. Lawrence River is being dismantled preparatory to start of 14 ft navigation in this channel July 1. The old structure, erected in 1898, will be replaced by a $6 million international high-level bridge expected to be completed November 15, 1958. Foundation piers for the new suspension bridge can be seen in the background. Until its completion, ferries will handle traffic.



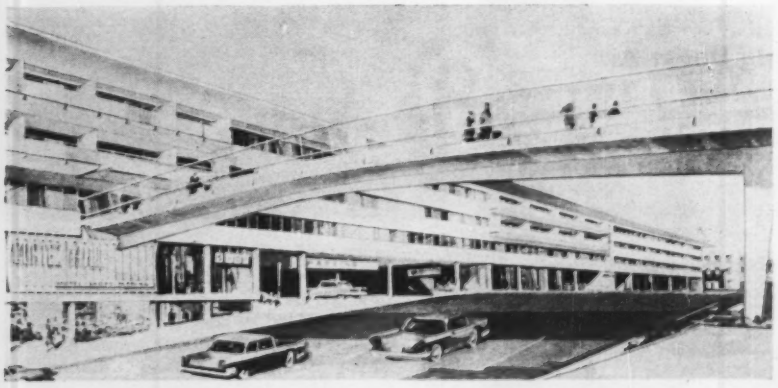
Hangar to Get Hung Steel Roof

Cable-suspended steel roof girders 158 ft long will support the roof of New York International Airport's 14th hangar. The big members are included in a $1.2 million contract just let by the Port of New York Authority to the White Plains Iron Works, of Peekskill, N. Y., for fabrication and erection of 3,500 tons of steel for the $10 million project.

Designed by Port Authority engineers, the structure will be 510 ft long and 400 ft wide. It will be the double-cantilever type, with girders 32½ ft apart extending both ways from an 84-ft-wide two-story center section. Girders will be hinge-connected at the inner end to the steel frame of the center section and will be supported at a point 108 ft out toward the free end by cables running back to the center section over 28-ft-high struts. Secondary framing and the roof deck also will be steel.

Air France, British Overseas Airways Corp., KLM Royal Dutch Airlines, Lufthansa-German Airlines and Sabena Belgian Air Lines will occupy the hangar. Each line has taken a 20 year lease on one of the six bays except BOAC, which has reserved two.

Steel is the only major contract let so far. Under the present schedule, foundation bids will be taken this summer, and superstructure bids this fall. Steel erection probably will start in October. Completion of the hangar is expected by early 1960.



Motel's Moving Walkway Will Span City Street

A motel construction job now in progress in San Diego includes the erection of a 127 ft pedestrian bridge with a moving deck for passengers. The span will link the new Cortez Motor Hotel with its existing parent hostelry, the Cortez Hotel, across the street.

The passenger conveyor will be the first installation of a modification of Otis Elevator Company's moving stairs. Otis is introducing the product to the market under the name Trav-O-Lator.

Like moving stairs, the traveling deck or platform will comprise a series of articulated treads traveling on wheels and tracks. The bridge will carry two of the platforms 32 in. wide, separated by a central balustrade supporting moving handrails. Reversible and with variable speeds, the two lanes will be able to carry up to 7,500 persons an hour.

Scheduled for completion later this year, the motel is now at the excavation stage. Paderewski, Mitchell & Dean, of San Diego, are the architects. M. H. Golden Co., of San Diego, is the general contractor.

Prequalification Ruckus Is Settled, Road Funds Move

A temporary embargo on federal aid road funds for Vermont has been lifted completely now that the U. S. Bureau of Public Roads has accepted new regulations drafted by the Vermont State Highway Department governing prequalification of contractors.

The state-federal dispute started last fall after the state highway board disqualified two construction firms from bidding, charging "sharp business practices" (ENR Feb. 13, p. 45). BPR would not accept the decision and the argument went to the Senate Public Roads Subcommittee before a settlement was reached. The settlement represents a defeat of the state's position.

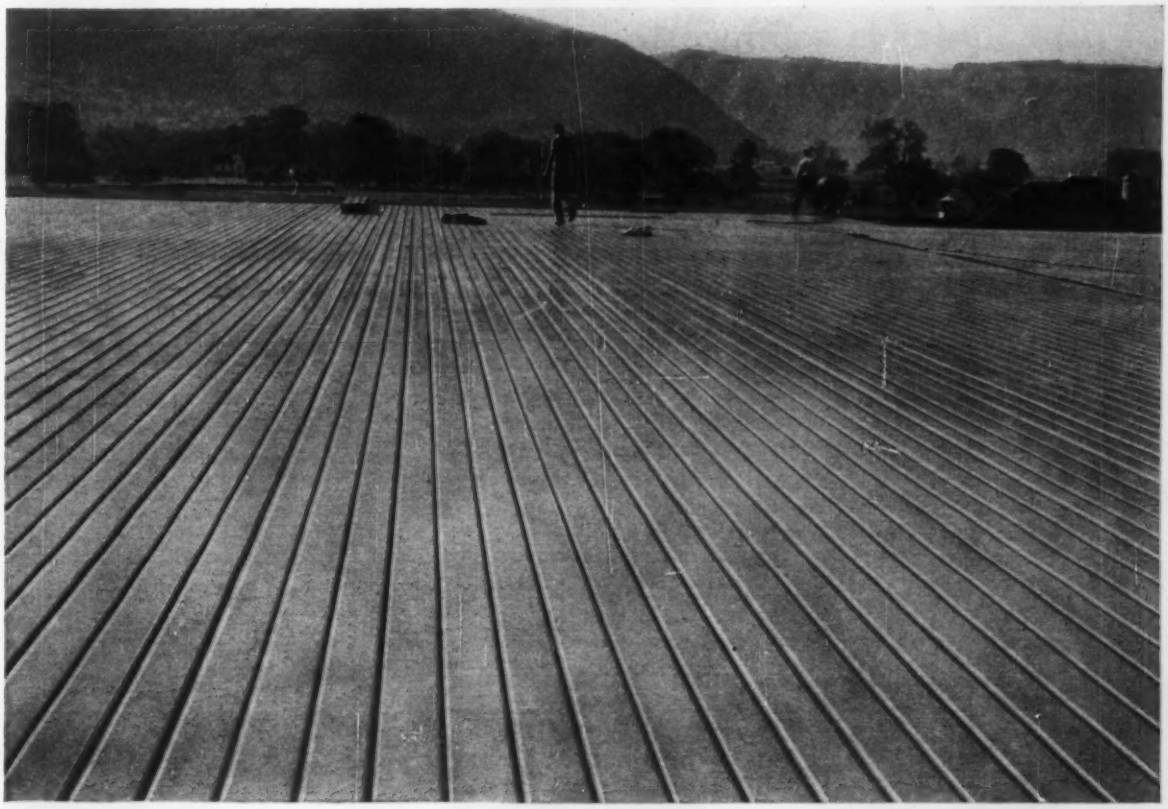
Apart from the funds involved here, there is more than $300,000 in federal aid money lying idle in the Vermont State Highway Department for lack of urban road projects. And another $350,000 will become available on July 1, with no urban projects in sight.

Briefs

• **Heat pump inches northward**—The climate barrier against northerly migration of the air-to-air heat pump has retreated to Buffalo, N. Y. In a suburb of the Lake Erie port city, Sylvania Electric Products Co. has dedicated a new 2½ story, 85,000 sq ft laboratory said to be the northernmost building with no heat source but outside air. The heat pumps are not backed up by auxiliary heating for unusually cold weather. Instead, they depend entirely on multistage compression to extract heat from outside air—even in subzero weather—to permit heating the premises with hot water. J. Fruchtbaum of Buffalo designed the building. York Corp., York, Pa., furnished the heat pumps.

• **TV at Hyperion**—Underwater television cameras will inspect construction of the $21 million 5 mile effluent outfall at Hyperion sewage treatment plant in Los Angeles, according to a board of public works spokesman. The electronic procedure is felt to be less costly than employing divers. Actual laying of the line is scheduled to begin in June.

• **Indiana state building**—The Indiana State Office Building Commission has approved a design for the new State Office Building submitted by Graham, Anderson, Probst & White, architects and engineers of Chicago, and Raymond S. Kastendieck, architect of Gary, Ind. The 13-story air-conditioned building will house 50 of the state's departments. Cost of the building will be about $23 million. Construction is expected to start early in 1959.



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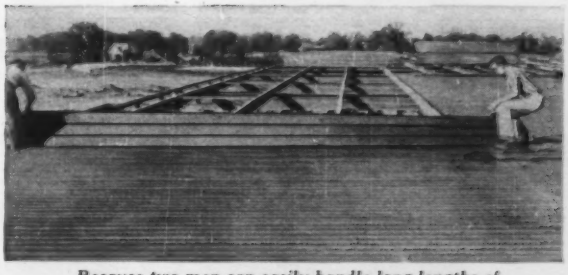

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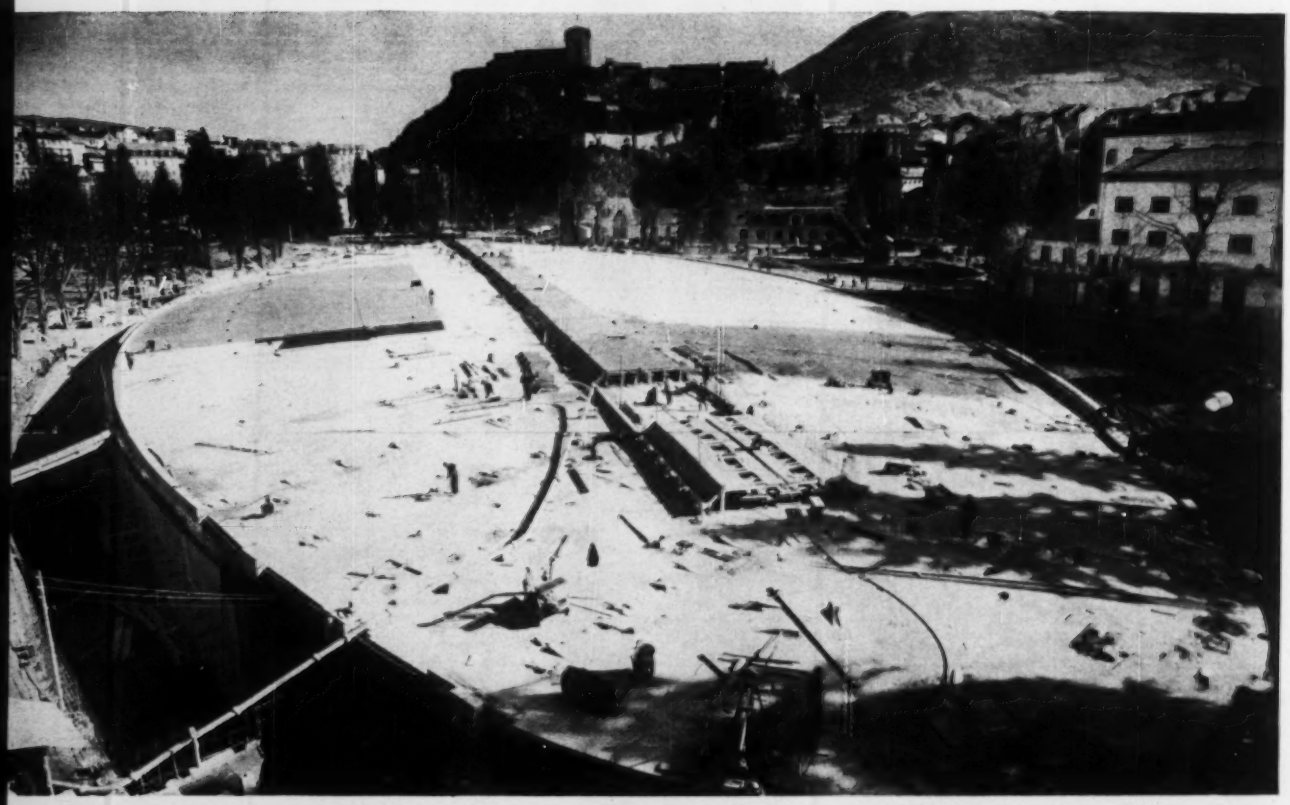
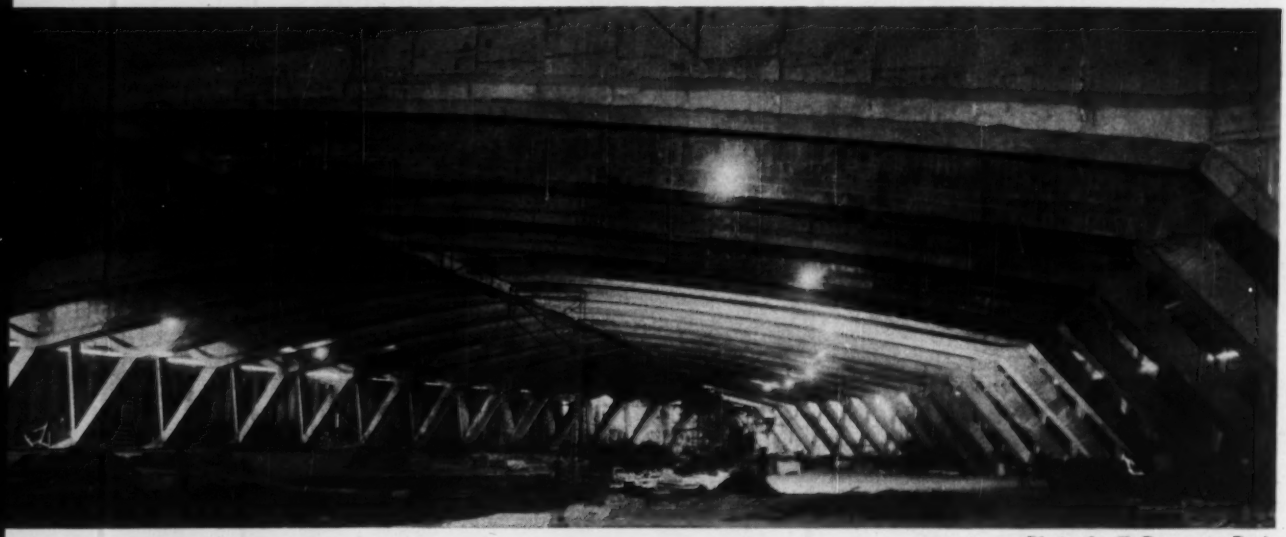
At Lourdes in southwestern France . . .

Two-Hinged Frames Cover Three-Acre





Photos by H. Baranger, Paris

CAVERNOUS BASILICA IS BUILT THEN BURIED so as not to alter the landscape around the famous shrine at Lourdes, France. Accommodating 20,000 pilgrims at a time, compared to 4,000 in the existing church, it will have an estimated 7 million visitors this year. In top view of roof, ventilation duct construction is under way.

Oval Basilica

In the small French town of Lourdes, in the foothills of the Pyrenees, completion of a subterranean prestressed concrete basilica was marked by it consecration, March 25, in anticipation of 7 million pilgrims who are expected this year in celebration of the one-hundredth anniversary of St. Bernadette's vision. This is the event for which the town is world famous.

The new basilica will accommodate 20,000 persons at a time compared to the 4,000 who can crowd into the existing church in the Grotto of Lourdes. It will thus considerably reduce the time that the pilgrims, many of whom are crippled and infirm, are obliged to wait their turn outside.

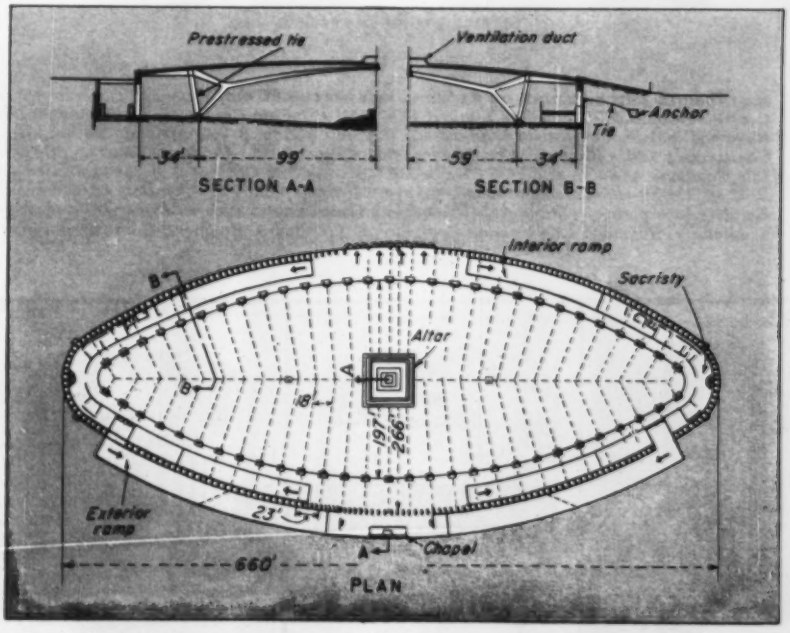
Plans for a new basilica were ordered in 1956 by the Bishop of Lourdes from Paris architect Pierre Vago. After consulting his colleagues, Pierre Pinsard and Andre Le Donne, Vago decided that the basilica should be built underground and covered by a lawn, to avoid changing the traditional appearance of the grotto site. An oval, representing the religious symbol of the fish, was chosen as the form for the structure.

The need to obtain the largest possible area free of supporting columns led the architects to adopt prestressed concrete for the framing. Eugene Freyssinet was called in as consulting engineer, and the project was drawn up under his supervision by the engineers of Entreprises Campenon-Bernard.

The basilica, to be known as the Basilica of Saint Pius X, is 660 ft long, 266 ft wide and 30 ft high at the center, where the altar will be placed. Six access ramps lead down into the basilica, which is bounded by a retaining wall within which the covered area totals about 129,000 sq ft. Of this, 92,000 sq ft in the center is free of supports, while the remainder is occupied by an encircling ambulatory aisle.

• **Framing**—The concrete framework is made up of 29 two-hinged arch frames, connected at their crowns by a longitudinal diaphragm and over the supports by a peripheral girder. The frames are set perpendicular to the oval exterior of the structure, and as a consequence the symmetrical halves of each frame do not intersect the longitudinal diaphragm at a right angle. The overall result is that the frames form a fishbone pattern. Also, the span of each frame is

TAKING SHAPE within an oval of sheetpiling driven in the front yard of the Lourdes church, the basilica framing consists of a central longitudinal diaphragm to which the halves of the transverse arches are fixed.



PLAN AND SECTIONS of the basilica emphasize the principal feature of the framing—two-hinged arches set perpendicular to the oval exterior wall and, as a consequence, intersecting the central longitudinal member at varying angles.

ON APRIL 2ND...

THE RAYMOND CONCRETE PILE COMPANY CHANGED ITS NAME TO

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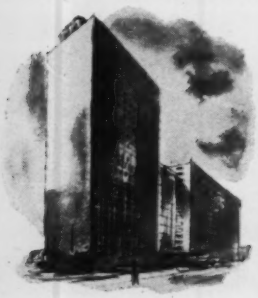
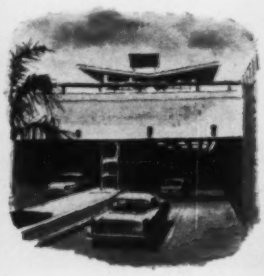


DETROIT CITY-COUNTY BLDG.
ON RAYMOND FOUNDATIONS



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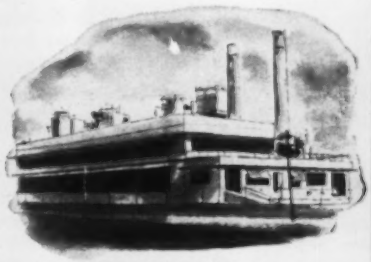
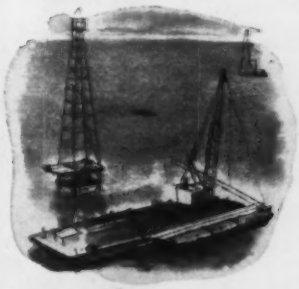
TEXAS TOWER NO. 1, CONSTRUCTED BY
RAYMOND IN A JOINT VENTURE

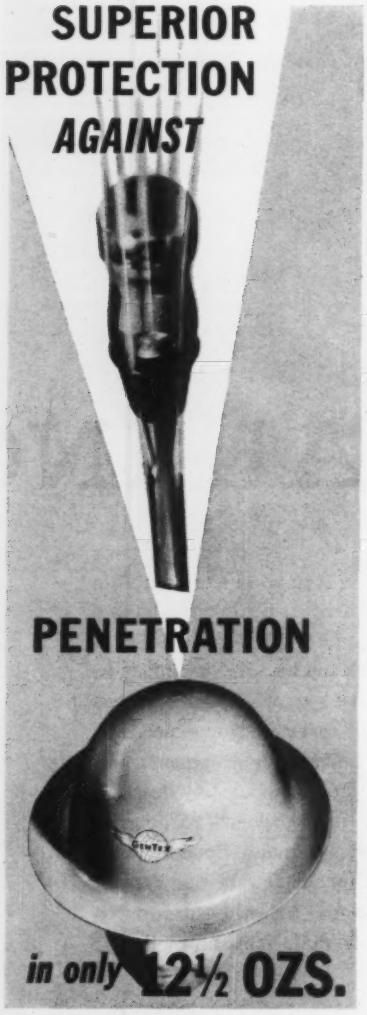


POWER HOUSE, PUERTO RICO
CONSTRUCTED BY RAYMOND



DERRICK BASES, VENEZUELA
CONSTRUCTED BY RAYMOND

SUPERIOR PROTECTION AGAINST PENETRATION



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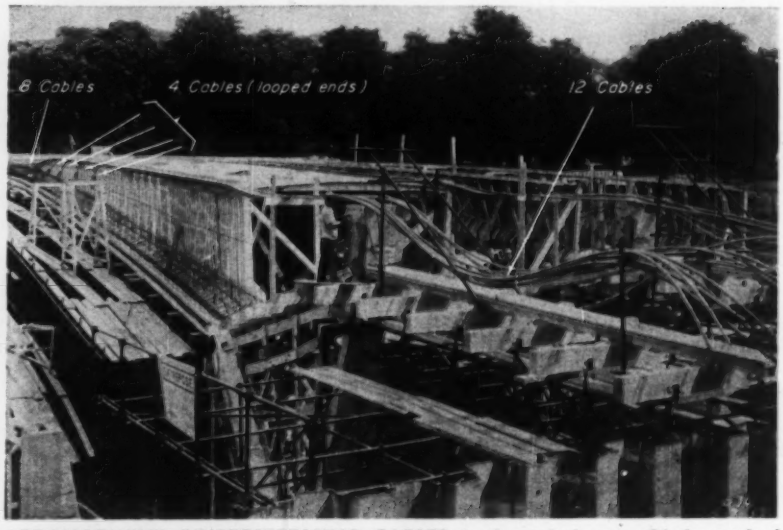
. . . Basilica framing is prestressed



ARRANGEMENT OF PRESTRESSING CABLES in the arch frames. Of the total of 12 cables (of 12 wires each), 8 are continuous, running in the top of the frame at the ends and curving down toward the bottom across the central portion. The other four cables do not extend across the central portion, but are stopped off and anchored with loops as shown. There are also three cables in the vertical tie member besides the workman.

different, the maximum being 200 ft (at the center) and the minimum 35 ft (at the ends).

Each arch frame consists of a horizontal member forking at the ends into two legs joined by a tension tie. The lower fork rests on the foundation hinge, while the upper one is extended horizontally to a support on the retaining wall.

The retaining wall, which must resist earth and hydrostatic pressure, is made of equally spaced buttresses connected by a continuous wall poured against a sheetpiling curtain and, at the upper part, by a capping beam, which carries the outer ends of the frames. On the south side of the basilica, stability of the retaining wall is assured by prestressed concrete ties connected to buried anchorages, but on the north side exterior access ramps provide the necessary horizontal support.

The roof of the basilica is made of thin, arched slabs connecting the upper flanges of the frames. The floor is a 4 in. thick slab. It was placed 20 ft below the original ground level, and on completion of the structure it will be 36 ft under the new ground level.

• **Construction**—At the beginning of the work a water-table in gravelly formation averaging 10 ft above the low point of the floor presented the principal problem. This, however, was readily solved by driving a continuous sheetpiling curtain and cut-off wall around the site to reduce the infiltration, and then collecting the remainder of the water in drainage tunnels leading to a sump from where it was pumped to the nearby river.

Construction of the framework proceeded smoothly. The center diaphragm was cast on a fixed tubular scaffolding, which was not removed until all of the arch frames had been completed in order to assure that their crown deformations would be uniform. The arches were built in pairs on rolling scaffolding, alternatively to the east and west of the secondary axis of the oval, in order to balance their thrusts against the center diaphragm.

Twelve prestressing cables containing 12 wires were installed in each frame. Eight of the cables extend entirely across the building in the top flange of the frames, except for about a 30 ft length across the centerline where they curve down into the vicinity of the bottom flange.

The remaining four cables are stopped off short of the centerline and anchored in the web of the frames. There are also three prestressing cables of the same size in the tension ties between the forked legs of each frame.

Several related structures were built at the same time as the basilica. These include a bridge leading from the emergency exit; a sump and pumping station to evacuate infiltration waters to the river; a ventilating building at either end of the main axis of the oval equipped with fans providing 2,340 cu ft of air per second; and a transformer station. Finally, the esplanade—whose longitudinal profile was modified to make raising of the ground over the basilica less obvious—was earth-filled.

Cost trend is down with REINFORCED CONCRETE

Another significant example of the trend toward reinforced concrete construction is the Morton Salt Building. The architects chose reinforced concrete flat slab construction because of its lower cost, compared to other types of framing usually associated with office building as a type. As the architects point out, one of the factors in computing relative costs of construction is time; and availability of materials is an important factor when starting times are considered. They stated that the relative availability of reinforcing steel permitted the job to get under way at the earliest possible date. *Before you build*, investigate this economical, flexible, and timesaving medium of construction.

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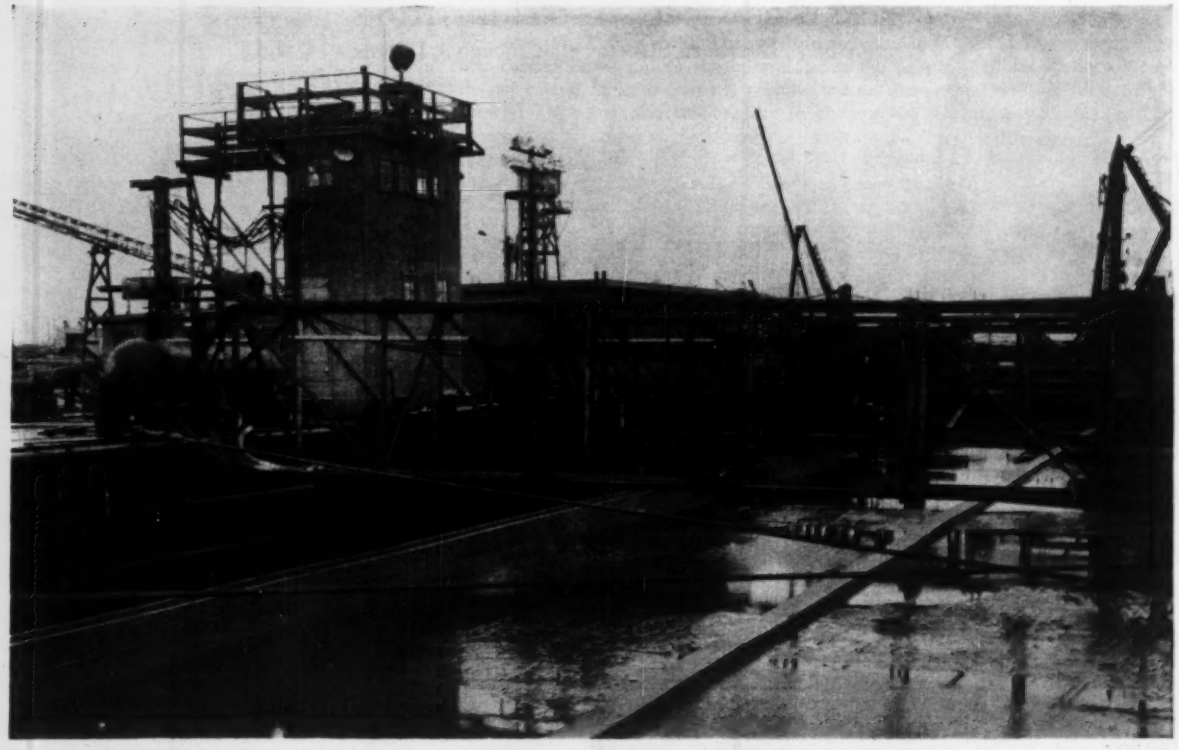
Floated Sections Joined As

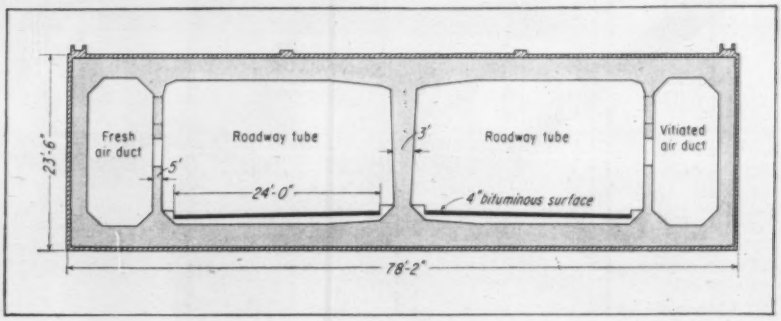
Speeding up the heavy U. S.-Canada auto traffic will be the function of the nearly completed Deas Island Tunnel. Tunnel elements were first floated in place then sunk and joined to make an underwater crossing.

A four-lane subaqueous tunnel under the Fraser River will speed vehicular traffic from Vancouver, B. C., through industrial areas to the south and on to the U.S. border. Work on the $16.5 million Deas Island Tunnel is nearing completion with the most critical phase —sinking six 18,500 ton floating concrete elements into the river bottom— virtually finished.

The tunnel, being built by the British Columbia Toll Highway and Bridge Authority, stretches 2,100 ft portal-to-portal under the Fraser River between Lulu Island and Deas Island (with another 1,100 ft of approaches on each shore for an over-all length of 4,300 ft). It will form a vital link in the B. C.



STEEL TRUSS connects barges across top of tunnel element. Ridge on tunnel is rail for gantry used to jet sand underneath.



TUNNEL SECTION includes two traffic lanes and two air ducts. Center wall has openings for passage of air.

River Tube

Department of Highways' $30 million express highway system being developed between Vancouver and the U.S.

The tunnel elements are rectangular in section, distinguishing the Deas project from other North American underwater tunnels, which are circular. The Deas section accommodate four 12 ft wide traffic lanes making up a pair of two-lane roadways separated by a longitudinal wall.

Its nearest rectangular counterpart is the Maas Tunnel in Rotterdam, with an 1,800 ft long underwater section. Deas Island tunnel approaches, will be open to the sky, however, while those of the tunnel in Holland are closed.

Designed by Foundation of Canada Engineering Corp. and Christiani & Nielson of Canada Ltd., the tunnel is made up of six concrete elements, each 344 ft long, 78 ft wide and 23½ ft high. Resting in a predredged trench, up to 70 ft underwater, the tunnel has a low-tide clearance of 40 ft 9 in., enough to permit the biggest ships in the world to navigate above it.

After the elements are positioned, a sand blanket is jetted underneath. Additional sand is backfilled around the sides. The entire underwater area will be blanketed with rock, which also covers the tunnel top. And the river banks both upstream and downstream will have a rock and concrete mattress as protection against scouring.

The six elements extend between ventilation buildings on each side of the river. Ventilation ducts extend the full length of the tunnel down each side of the concrete boxes.

• **Built in drydock**—The sections were cast in a big drydock gouged out of the river embankment just downstream. When the elements were structurally completed, toward the close of last year, the drydock was flooded. Contractor crews (a joint venture of Peter Kiewit Sons' Co. of Canada Ltd., Raymond International Co., Ltd., and B. C Bridge and Dredging Co.) then proceeded to float the sections out—one at a time at two-to-four week intervals—to an outfitting jetty. Sinking in the predredged trench followed.

According to Ole H. Bentzen, overall project manager for the joint FENCO-Christiani venture, river conditions are such that the sinkings only can be carried out between October and May when river flow is lowest. The job of maneuvering the elements from the jetty to final resting place is under direction of Robert P. Kitchen, 50-year-old riverman from Peter Kiewit Sons' Co. of Canada Ltd. The first

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. . . Tube sections floated

one, on January 6, took a nerve-wracking 13¼ hours in thick fog and driving rain. "But we had to move when we did," said Fred Knez, project superintendent for Kiewit-Raymond. "If we'd missed that tide it might have meant a great difference to our schedule."

Riverman Kitchen's lieutenants for the sinkings transmit orders by radio and telephone through an intricate communications control board to all sections of the element being sunk and to the fleet of 14 equipment carriers.

• **Flooded and floated**—Even before the drydock area was flooded, the tunnel sections were fitted with watertight bulkheads at each end. Further, the air duct sections were bulkheaded in eight compartments each to hold water ballast. Enough ballast was introduced so that when the tunnel elements were floated the top was just at water level.

In the drydock, the tunnel sections were fitted between two pairs of steel barges (44x150x10½ ft) that are interconnected by steel trusses. These units mount the necessary winches to control horizontal movement in both directions as well as vertical movement.

After being winched to the outfitting jetty, tunnel sections were rigged with still more placing equipment. Steel towers were mounted at each end to support aligning instruments and communications equipment. And 37 ton concrete blocks were slung under the element near each corner to serve as temporary foundations. Finally, a gantry was mounted on rails on top of the element to be used for jetting sand underneath after the section had been positioned.

Main control of up-and-downstream movement was provided by a series of special anchors, jet driven about 30 ft into the river bed. The anchors weigh 3,100 lb and have heavy steel plate flukes that are opened to provide holding power as the anchor is driven into the Fraser River bed. Some 7 ft long, the anchors open to a maximum of 6 ft in width. The units have been tested to 75 tons vertical lift. After use, the anchors can be dislodged from the river bed by water jetting.

• **Sunk into place**—The elements are sunk into position by adding water ballast. Winches on the accompanying barges also control descent of the concrete masses. Men sealed inside the concrete elements controlled ballast tank valves on order from above. These men remained in the units as long as 24 hours at a time.

The schedule of sinking of the first element provides the basic pattern that is repeated for all other elements. When zero hour arrived, the section was moved toward the Lulu Island ventilation building. Warping the element into position took 6 hours before it was located 10 ft south of the ventilation building connection along the center line of the trench. Then the central ballast compartments were flooded.

Sinking continued until the bottoms of the foundation blocks were about 3 ft above the gravel pads backfilled in the trench. The unit then was pulled slowly toward the ventilation building and lowered again until the foundation blocks were 6 in. above the gravel. It finally was pulled home, with contact being made with the ventilation building and the foundation blocks resting on the gravel pads.

Final vertical alignments was provided by means of movable steel columns installed in each corner of the element, which are powered by 300 ton jacks. These columns rest on heavy steel plates embedded in the founda

GRAVING DOCK for casting the six 344 ft long tunnel elements was dredged from riverbank site. Wellpoints kept the area dry during concreting.

SIXTY FOOT DEEP EXCAVATION for north approach was kept dry by four-level wellpoint system (fourth level just inside of sheetpile cutoff).

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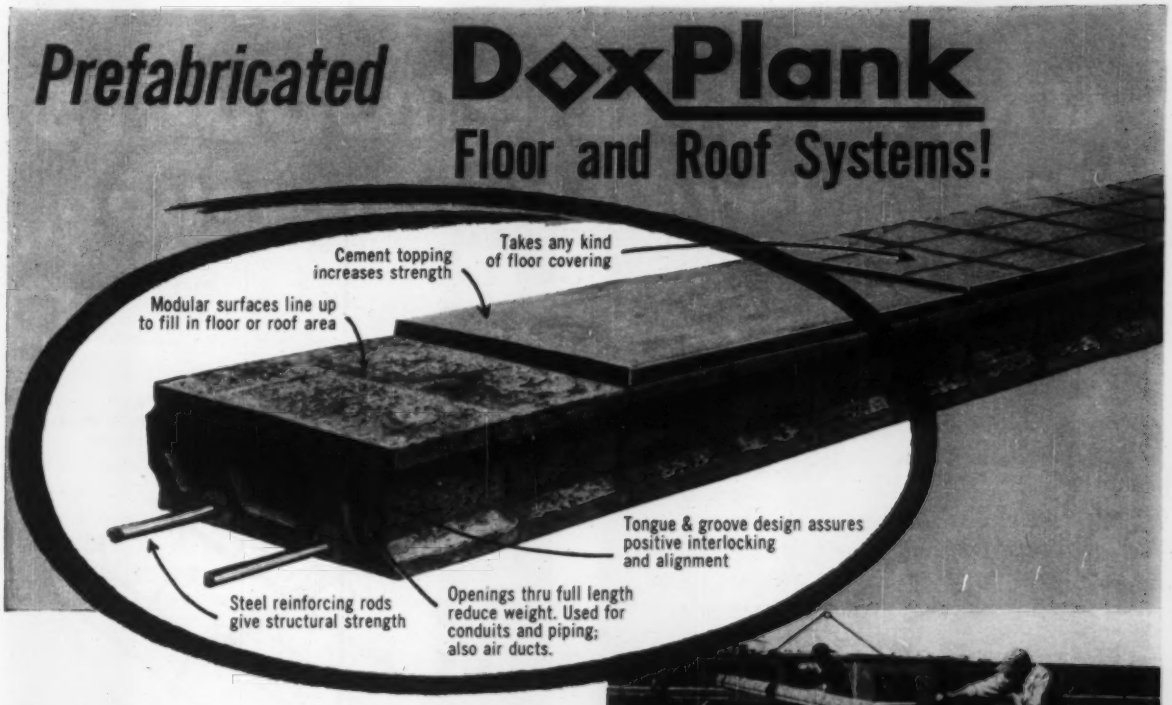
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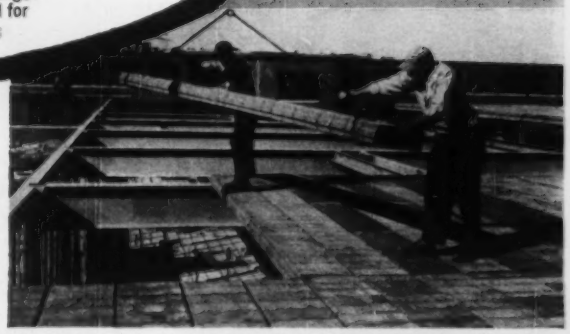

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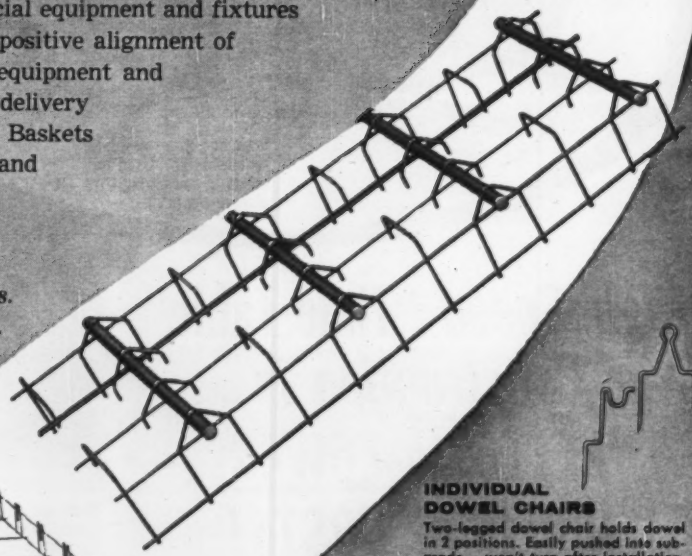
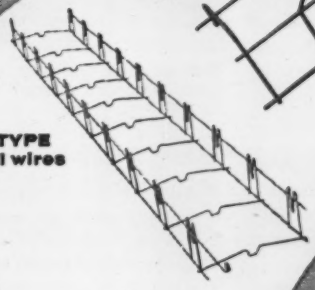
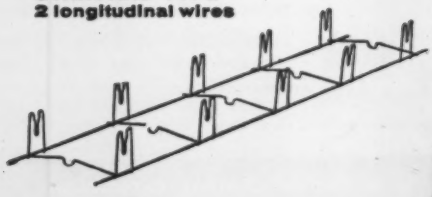
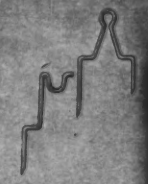




STANDARD TYPE
4 longitudinal wires

STANDARD TYPE
2 longitudinal wires





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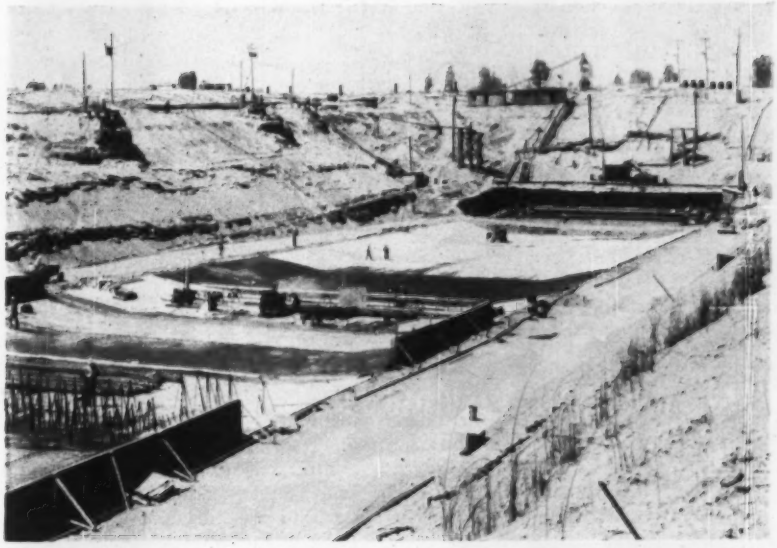
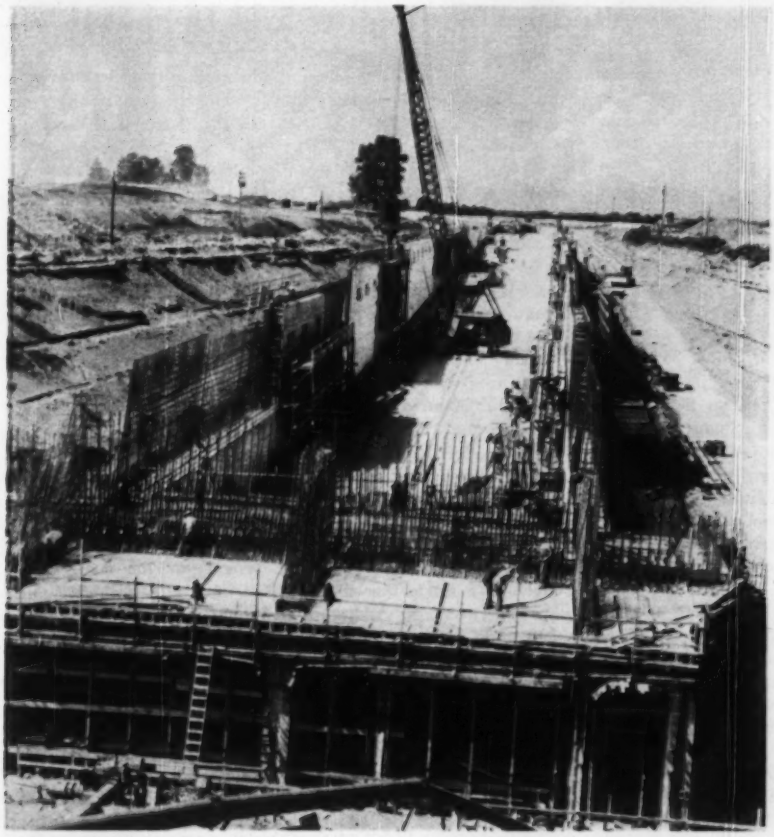
. . . Approaches pose dewatering problem



DEWATERING SOUTH APPROACH was accomplished by series of 120 ft deep wells supplemented by one level of wellpoints. Wells are equipped with deepwell turbine pumps.



APPROACH CONSTRUCTION resembled concrete trough. Exterior of all concrete is waterproofed to keep working area dry.

tion blocks.

Before final vertical adjustment, the columns on the corners toward the ventilation building were jacked up about 1 in. to permit removal by divers of blocking between the bottom of the element and foundation blocks. And before sand jetting under the elements was begun, the section was raised about $\frac{1}{8}$ in. from final position by the hy-

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draulic jacks. After sandfill was placed the section was then let down. More than 5,000 cu yd of sand is jetted under each element.

The joints between sections were sealed by an inflatable rubber gasket. Coupling hooks held the section in place until a permanent connection was affected by welding plates and filling in with concrete.

Before the elements were placed, the trench was dredged by the William G. MacKenzie, one of Canada's largest dredges. Dredging was kept only about a tunnel-section length ahead of placing so that the trench would not have a chance to be backfilled by currents.

• **Constructing the sections**—To cast the elements, a graving dock was gouged out of the river bank downstream. Its floor was 26 ft below ground level and 19 ft below river level.

Excavation of the 633x384 ft graving dock required the removal of 500,000 cu yd of material—mostly by dredging. American Dewatering Co. provided a (Moretrench) wellpoint system to keep the huge area dry during concreting. The Moretrench engineers had two small problems: a corrosive water condition that determined type of wellpoint; and a nearby mill under which constant check had to be made on water level, lest differential settlement be involved.

The drydock area was dewatered successfully to at least 6 ft below subgrade, using 12 in. diesel pumps and 12 in. discharge header.

Contractors for casting the elements were Narod Construction Co. and Dawson & Hall Co.

Each tunnel element is protected on all surfaces by watertight membranes. And these water barriers are connected to membranes in the ventilation buildings at each end of the section.

Bottom slab membrane is a ⅜ in. steel plate protected underneath by 4 in. of concrete. Side and roof membranes are built up of bituminous materials with 4 in. wood planking protecting the walls. For 11 ft at each end of each element, the bituminous membranes are replaced with steel.

The floor of the elements are 3 ft thick reinforced concrete. The contractor completed two floors daily with pours of 350 cu yd each.

The five longitudinal walls came next, and, to speed this work, sliding forms were used, moved forward by winches.

The roof construction, which followed, took up to 400 cu yd per element, and the contractor completed two roof sections daily.

Final stages of the element construction was closing the ends with a 6 in. concrete slab, reinforced with 24 in. I-beams to form the temporary bulkheads.

Approach Excavations Protected by Wellpoints and Deepwells

Both approaches to the Deas Island Tunnel are open, concrete-lined trenches extending right up to the river bank. This minimized the underwater construction, but it complicated approach construction because it was necessary to develop some scheme of unwatering the 60 ft deep excavations.

Ground conditions on the Lulu Island side varied substantially from those on the Deas Island side. Result was a different method of unwatering each approach.

The 1,300 ft Lulu Island approach is protected by a multistage wellpoint system. On the other hand, the Deas Island approach system centers around deep wells equipped with turbine pumps. Well points and pumps were supplied and installed by the dewatering subcontractor, John W. Stang Associates, Ltd., for whom Thomas Quinn was in charge.

• **Difficult dewatering**—Installation of the systems and initial dewatering at both excavations took place last spring, coinciding with the freshet season. Besides being plagued by high river stages, dewatering was further complicated by construction of an earth cofferdam extending some 60 ft farther into the river bed than originally was contemplated. The purpose was to be able to cut a work road into the slope at a depth approximately 60 ft below river level.

The multi-stage wellpoint system for the north or Lulu Island approach was selected because the soil consisted of fine to medium sand continuing to about 68 ft below river level. Below that, to unknown depths, are lenses of silty fine sand, silt and clay, all having a comparatively low coefficient of permeability; thus, these zones are incapable of yielding an appreciable amount of groundwater.

However, conditions at the south or Deas Island approach, although very similar from the surface of the ground to subgrade, differed vastly below that level. A medium to coarse sand extending from subgrade to a depth of 98 ft below the river was indicated. Hence, deepwell pumps were chosen to dewater this excavation.

• **Closely calculated**—Excellent sub-surface exploration and soil analysis by the project engineers resulted in the calculation by the dewatering subcontractor of nearly the exact volume of water required to be pumped at the north approach to lower the groundwater table below subgrade.

An area about 900 x 200 ft was dewatered at the north approach. At the deepest part, there were four levels about 15 ft apart, with 3 in. dia wellpoints on about 2 ft centers driven 30 ft into the sand. Header pipes ranged from 6 to 10 in. dia. Pumping capacity was 20,000 gpm, including standby equipment.

Subsoil conditions encountered during the drilling of the wells at the Deas Island approach were somewhat different from those encountered at the boring locations. Actually, a fine black sand, with silt and clay lenses below, exists at a variably close depth below subgrade. Because of this, the dewatering design was subjected to some minor modifications. A small amount of additional wellpoint equipment was added to supplement the deepwell pumps.

The 10 wells for the south approach were driven 120 ft deep. They were serviced by 12 and 14 in. pumps, with the larger size being along the river front. The wells had 16 in. dia wood stave casings, and were gravel packed to about 36 in. dia. Pumped volume averaged 1,500 gpm for each pump.

The supplementary wellpoint system on the south end included a single row about 400 ft long with wellpoints on about 2 ft centers. Additional wellpoints were added for about 300 ft on each side of the trench at the onshore end beyond the range of the deepwell turbines.

• **Approach construction**—The approaches are designed as waterproofed concrete troughs. Where wall height exceeds 10 ft, slabs cantilevering out from the troughs are backfilled so the entire assembly will resist uplift.

The roadway concrete varies from 2 to 7½ ft. thick. Wall height rises to 43 ft, and thickness is up to 6 ft. The entire roadway was cast on top of a 4 in. slab covered with an asphaltic and glass fiber waterproofing membrane.

The troughs were cast in sections, with joints between formed as expansion joints including polyvinyl waterstops to permit some movement. A central wall runs between the two roadways for the last 420 ft from the tunnel proper to minimize passage of foul air from one roadway to the other.

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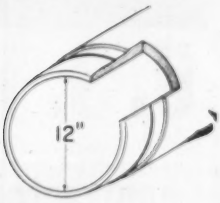

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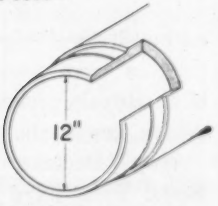

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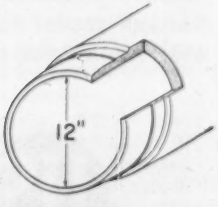

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12	1500	2400	3300	4000	5000
14	—	2400	3300	4000	5000
16	—	2400	3300	4000	5000
18	—	2400	3300	4000	5000
20	—	2400	3300	4000	5000
24	—	2400	3300	4000	5000
30	—	—	3300	4000	5000
36	—	—	—	4000	5000

Pipe is available in a wide of new crushing strengths

Progressive new concept permits greater efficiency in sewer design . . . reduces overall costs through closer matching of crushing strengths to needs!

HERE'S THE BIGGEST sewer pipe advance in years! In a revolutionary move, Johns-Manville introduces five new sewer pipe classifications to greatly simplify accurate sewer pipe specification . . . permitting overall cost saving to a degree never before possible.

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Permits greater efficiency in system design. To the engineer, the new Transite crushing strengths mean new ease in achieving greater efficiency in sewer design. For now he can plan pipe layouts as he has always wanted—selecting pipe on the basis of depth of cut, width of trench, type of soil and manner of bedding. The result: far greater overall economy through use of more realistic safety factors . . . reduction in the need for over-design . . . with costly concrete encasement and cradling needed in fewer areas.

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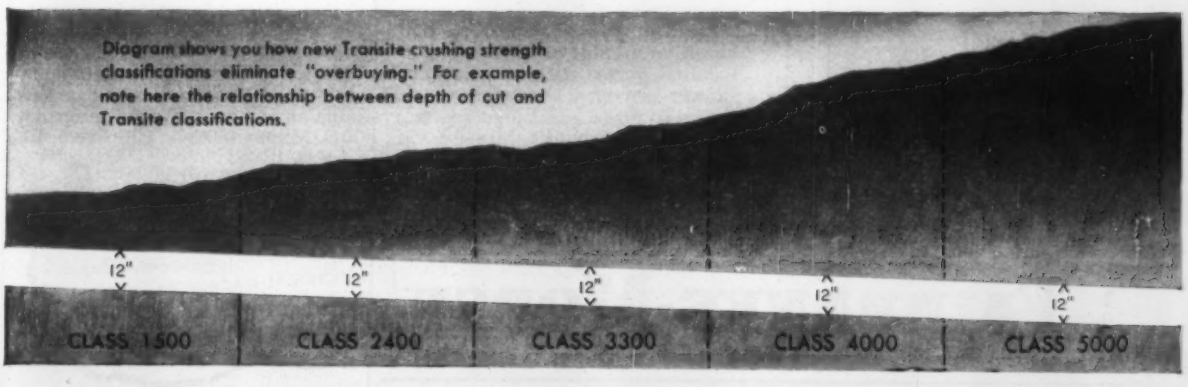

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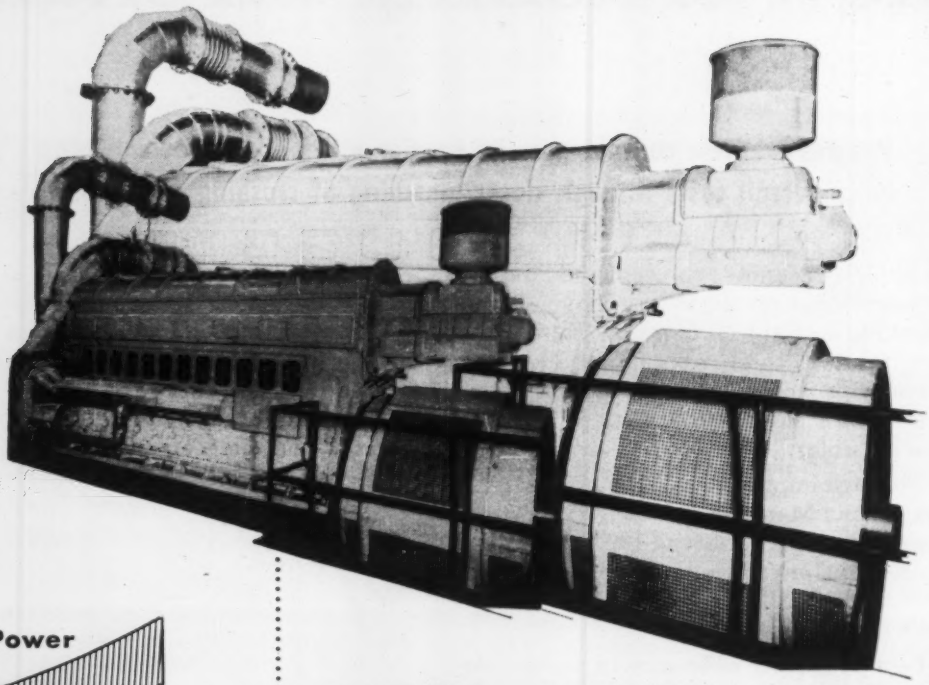
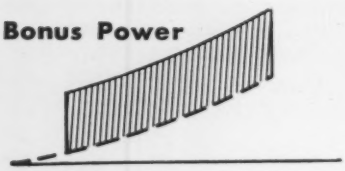
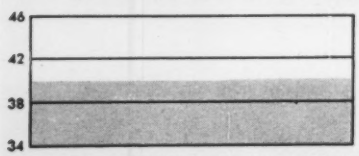


Bonus Power



Auxiliary blower is automatically declutched at loads above approximately 1/3 rating to deliver more usable power at the flywheel.

Increased Thermal Efficiency



Turbo-charged Fairbanks-Morse Model 38TD-8 1/8 Opposed Piston Diesel is approaching a new high of 40% efficiency.

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Stationary installations—save on foundation and building costs.
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Greater power is available at higher altitudes because the engine is less sensitive to atmospheric pressure. Oil and water cooling requirements show almost no increase at the higher output. It's all possible with careful matching of system and engine. Divided manifolds permit use of exhaust pulses with no pressure cancellations. Engine-driven auxiliary blower provides scavenging air up to ⅓ load—declutches above this figure to make additional power available at flywheel. For full information write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

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FLOOD DISASTERS like this pictured at Waterbury, Conn., after the famous hurricane of 1955 wouldn't occur, the experts have long contended, if man-made structures were prevented from crowding into a river's natural flood channel. But regulating river bank development was a near impossibility in the U.S. until . . .

. . . Connecticut's Gov. Abraham A. Ribicoff (seated) used the '55 flood to push an effective law through the state legislature and Water Engineer William S. Wise actually began setting stream encroachment lines.

State Pioneers Flood Plain Zoning

Connecticut has learned its flood lessons well. Easily the biggest sufferer in the catastrophic Northeast floods of August, 1955, the Nutmeg State is now more than halfway through a flood plain zoning program with teeth that is unparalleled in the nation.

Connecticut also is embarked on a joint state-local flood control construction program aimed at a $50-million total that approaches the planned federal program for the state. And a third outgrowth of the '55 floods is a federal-state-local beach erosion construction program that is moving briskly and smoothly along.

Connecticut is the only state that has an effective flood plain zoning law. Indeed, only a handful of local communities across the country are enforcing this type of ordinance. But it took the '55 floods to awaken Connecticut.

Ten years ago, the state enacted a law allowing individual municipalities to set stream encroachment lines. But not one town did. In the aftermath of the '55 floods, which caused $370 million of damage in Connecticut, the state legislature directed the state Water Resources Commission to establish ". . . on any sizeable stream, lines beyond which . . . no obstruction or encroachment shall be placed . . . unless specifically authorized by the Commission."

It took some time for actual staking out of lines to begin, since procedures for calculating design floods and backwater curves had to be determined. But now, spending at the rate of $100,000 a year, the Water Resources Commission has established stream encroachment lines along 75 miles of river out of 150 river miles requiring zoning.

• **Politically difficult**—To set up a flood plain zoning program is neither politically nor technically simple, especially in a state with extensive industrial development along its river banks.

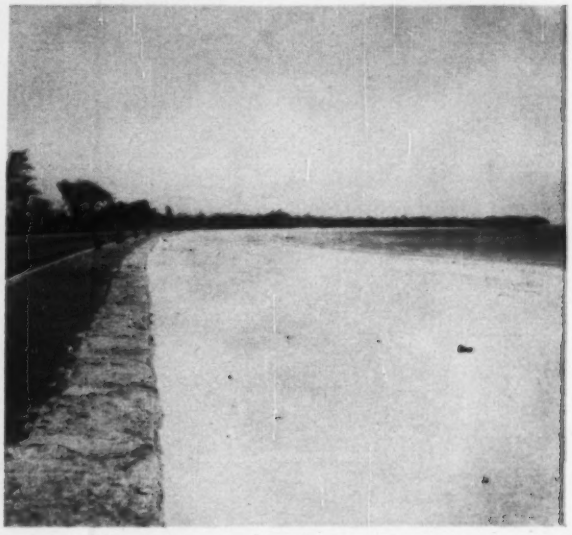
A large share of the political credit falls to Connecticut's able governor, Abraham A. Ribicoff. He was instrumental in pushing the enabling law through in 1955 and in keeping his state flood-conscious during succeeding years. Indeed, the governor unburdened himself of some remarkably courageous, and seemingly politically inopportune, blasts at local apathy.

While Governor Ribicoff took care of the needed oratory, his waterman, William S. Wise, director of the multi-responsibilitied Water Resources Commission, quietly set up the technical program.

Fortunately, Connecticut, and the rest of New England for that matter, was brimming over with comprehensive flood control plans prepared by the

. . . Connecticut's interest in water extends to an exemplary beach erosion program

DENUDED BEACH existed near Bridgeport before $1 million-a-year federal-state-local program was begun in 1956.



SAND FILL builds beach to 100 ft width. Projects are expedited by financially responsible local boards.

Corps of Engineers (which were never translated into construction, though authorized by Congress, because of the usual local objections to land acquisition for reservoir sites and failure to provide right-of-way for channel improvement and levees). WRC combed through these plans and assumed the most desirable projects would be constructed. So it is the flood flows that would result with these projects in operation that are taken into account in the zoning program.

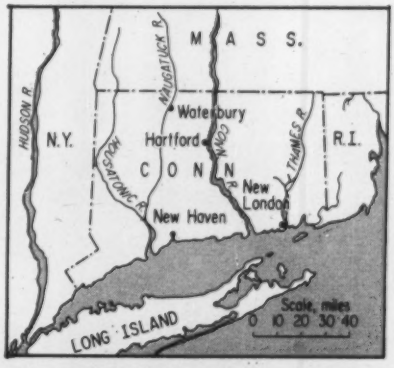
• **Flood records**—The second basic WRC decision concerned the magnitude of flood to be zoned. Here, too, Connecticut was fortunate in being able to draw upon 320 years of recorded flood history. In 1955, prior to the calamitous floods, two expert hydrologists of the U.S. Geological Survey, B. L. Bigwood and M. P. Thomas, produced from these data a flood-frequency curve for the entire state and a remarkably simple and highly accurate formula for determing design flood flows for a given drainage area anywhere in the state.

It is noteworthy that even 320 years of observed flood history, as reflected in the Bigwood-Thomas flood frequency curve, did not hold up for the 1955 floods. The curve, which is a plot of recurrence in interval against ratio to mean annual flood, was foreshortened considerably.

Using the post-1955 flood data, WRC specified that every river in Connecticut, except the very heavily industrialized Naugatuck River, was to be zoned for a flow five times the mean annual flood discharged. This corresponds to about a 150 year flood (and a 300 year flood on the pre-'55 flood curve). The Naugatuck is being zoned for a flood factor of seven, which approaches a 300 year flood. The '55 flood in the Naugatuck valley approached 14 times the mean annual flood.

Mr. Wise's heavily burdened but lightly staffed agency called in Howard, Needles, Tammen & Bergendoff, New York City consulting engineers, to start from the Bigwood-Thomas flood flow formula and help develop a method for computing backwater curves and criteria for setting stream encroachment lines (see box on p. 48).

• **Ground rules**—Meanwhile, WRC formulated the ground rules for carrying out the program. When the floodway extends outside of the existing channel, zoning lines are placed so that riparian owners on each bank are equitably affected. Non-conforming structures can remain in the flood channel until destroyed 50% or more (which is similar to building zoning ordinances). However, if a non-conforming structure is considered hazardous to life (by virtue of it so constricting the floodway that flood waters would back up beyond a reasonable channel), WRC can condemn and remove it. And to accomplish the main purpose of the zoning, no new structures that will constrict the floodways are to be built.



CONNECTICUT'S RIVERS flooded in August, 1955, causing $370 million damage.

WRC holds a public hearing in the area to be effected by a proposed encroachment line. The state merely zones the riparian land within the flood way, does not purchase it. However, it is empowered to purchase the land in exceptional cases.

A riparian can appeal the encroachment line in the courts. Thus far, on 75 miles of zoned river valley, there have been nine appeals—everyone where a large portion of a parcel fell within the floodway. No decisions have been rendered yet.

There are, of course, many more river miles in Connecticut than the 150 miles planned for zoning. WRC policy is to set the encroachment lines now through the most important river stretches, mainly in municipalities. It will set the lines in the unzoned river stretches as these areas are planned for development.

Engineering of the stream encroachment lines is now accomplished by one man on the WRC staff. Mr. Wise estimates that the 150 miles of planned zoning will be completed in the next two years.

• **Flood control construction**—It is obvious that the success of the flood zoning program depends on carrying out the flood control construction program.

The federal program has stepped up considerably as a direct result of the

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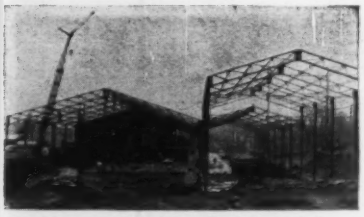

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. . . State also has flood construction program

'55 floods. Of the $335 million program authorized by Congress for the entire New England region, about 20% had been completed by 1955. Now another 20%, or about $65 million, is in design or under construction. Over the entire U. S. about 50% of the authorized flood control program is complete.

Because the steep and narrow New England river valleys offer relatively few good reservoir sites, and hardly any suitable for multipurpose development, flood control in the region is quite expensive compared to other parts of the country. Reservoirs, dikes and channel improvements that the Corps of Engineers can justify economically on a basin-wide basis would prevent about 60% of the annual flood damage of $32 million that would occur if there were no flood control projects (about 30% is being prevented by existing projects).

This throws a large part of the flood control burden on non-federal funds for local protection works. WRC estimates Connecticut requires about $50-million of locally financed flood protection—and it has a construction program under way whereby the state will pay upwards of one-third this amount. The projects will comprise channel-widening, dikes, conduits, flood walls and bank protection. Reservoirs are beyond the local scope.

During the special 1955 flood session, the state legislature appropriated $1 million for flood control construction, as part of a $70 million expenditure for flood rehabilitation. This $1 million and another $1.25 million voted by the 1957 legislature was not spent, however,

Engineering the encroachment lines

Determination of design flood

The formula used is $Q=RC_BAS$, where Q is the design flood. This is the special Bigwood-Thomas flood flow formula arrived at for Connecticut (U.S. Geological Survey Circular 365).

R is a flood factor taken from the flood recurrence interval curve computed for Connecticut streams. R is thus based on the flood recurrence interval to be designed for. The Water Resources Commission has specified for all basins except the Naugatuck that R=5, which corresponds to about a 150 year flood.

C_B is an empirical coefficient depending on the channel storage of the stream involved and the extent of development in the area. It varies from 0.55 for stream with large channel capacity and little urban devlopment to 3.0 for the reverse conditions.

A is the total drainage area contributing to the design flow at the point in question. Messrs. Bigwood and Thomas recommend planimetering USGS maps to obtain this value.

S is a weighted basin slope computed by averaging the channel slope of the main channel with the average of the tributary channel slopes (for those tributaries draining more than 10% of the area).

Determination of water surface profile

The method used in Connecticut follows the Corps of Engineers' Manual for Civil Works Construction, Part CXIV, Chap. 9. It is based on Bernoulli's Theorem, written as $Z_2=Z_1+H_{V1}-H_{V2}-H_L$, where Z is water surface elevation, H_V is velocity head and H_L is intervening loss.

Manning's formula is used to obtain the friction loss. The standard equation is solved for S, which gives the friction slope which an be multiplied by the distance between sections to give friction loss.

Water surface elevation calculations also take into account, by standard methods, effects of the following: Bends in the stream, bridge piers, submerged bridges, channel width changes, dams, overbank flow, confluences with tributaries, supercritical flow and hydraulic jumps.

Backwater curve computations are started, wherever possible, at a point where the water elevation can be determined, such as a gaging station or a dam. The calculations then carry the water surface elevations upstream, section by section, until a water surface profile is obtained for the entire reach in which encroachment lines are to be set.

Setting the encroachment lines

Utilizing the water surface profile as a basis, WRC sets the actual encroachment lines. There is little problem when the surface falls within the river channel, as lines are set at top of the bank. When the flooded area extends beyond the channel, the Commission sets the lines in accordance with policies described in the main article.

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two ropes in one!

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So, in one rope you have the greater flexibility and abrasion resistance of lang lay construction *plus* regular lay's superior stability under severe operating conditions.

Preformed Herringbone is made of two *pairs* of lang lay strands, and two strands of regular lay which separate the two pairs of lang lay—all of it made of Type 1105 rope wire.

For three years Herringbone has been used for general hoisting, holding and closing lines, shovel ropes, wagon scraper ropes and dragline ropes. Without reservation, its performance has been superior to that of any other rope used for the same jobs . . . even in the hands of inexperienced personnel! *Its proven capabilities clearly suggest its use for all jobs where steel core ropes are normally used.*

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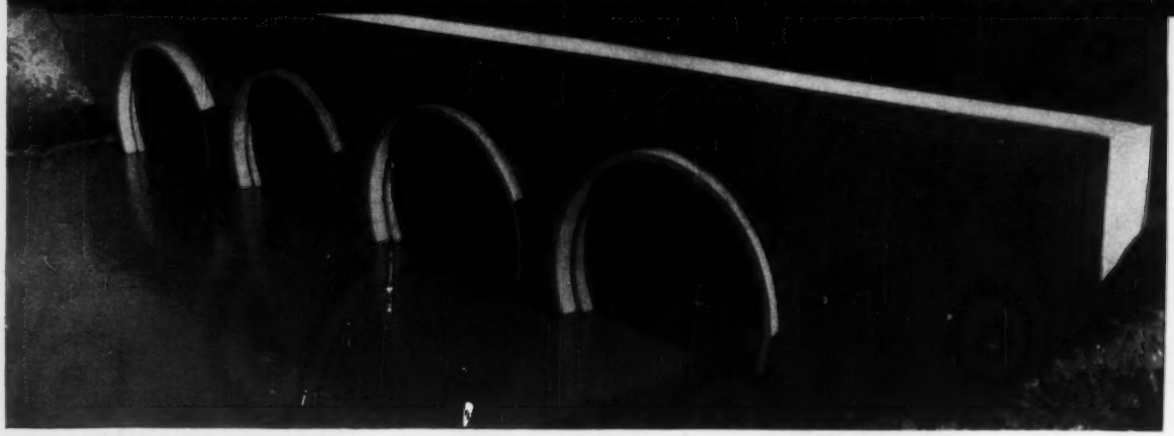

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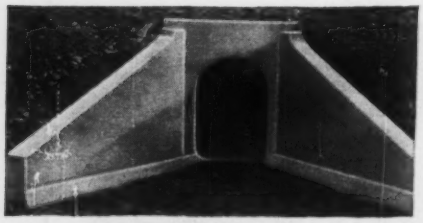
Elliptical Hi-Hed Reinforced Concrete Pipe permits greater self-cleansing velocities in dry weather periods. Also perfect for drainage structures under unlimited fills because Hi-Hed has 50% greater strength than its round pipe equivalent.



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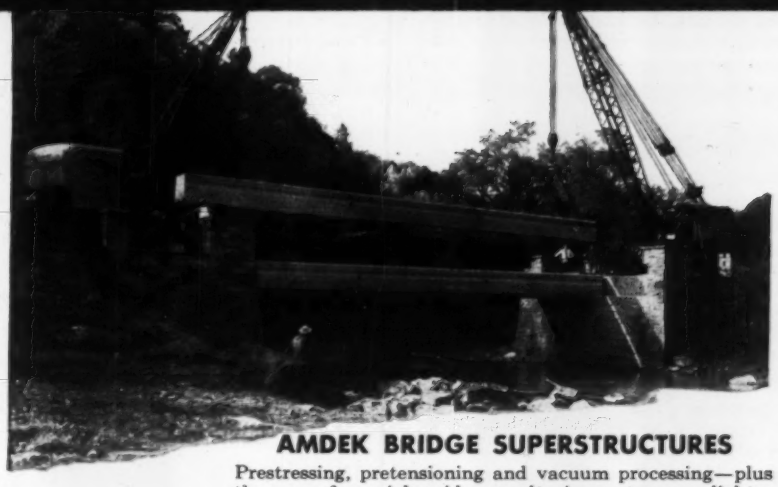

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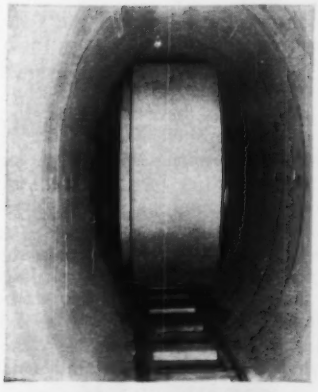
Elliptical Lo-Hed Pipe carries a greater flow than its round equivalent—in a minimum depth of cut with increased depth of cover. Easier to lay, to grade and line. Pre-tested strengths to answer any low headroom problem.



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because plans hadn't been engineered and no money had been allocated for this purpose. Happily, the 1957 legislature also gave WRC $100,000 for engineering. Five projects now are being planned by private consultants, and one is getting near the bid stage.

The program is a joint state-local effort. For a particular project, the state, through the Water Resources Commission, will pay between one-third and the total cost, depending upon whether the property beachhead is private, municipal or state owned. The benefitted community pays the remainder. However, the state will loan the localities their share, to be repaid in any time up to 20 years.

Local flood control commisisons are the key to Connecticut's contemplated construction program. After the 1955 floods, Governor Ribicoff urged that every community with a flood problem set up an official board (which could be composed of members of an existing body such as a city council or a board of selectmen). Just about every municipality that should has.

These boards are designed to be the coordinating agency between the state and the municipality. A primary function has been education of the local populace to the flood menace. In a few cases, the boards have acted as the agency that furnished local shares of federal flood projects. And in one or two instances, cities have gone ahead with the preparation of project plans by themselves.

Now, the boards are expected to assume the leading role in marshaling public support for the upcoming state-local program. They also are to be the responsible financing agency for the local shares. Actual design and construction supervision of flood control projects will be handled by the state Department of Public Works.

A somewhat unusual setup exists for the Hartford area, in which $20 million of needed local projects are concentrated. The Greater Hartford Flood Control Commission was authorized by the state legislature to carry out a program directly using bond issue funds. However, the Water Resources Commission believes that Hartford agency may be eligible for state aid once a definitive program has been formulated.

All in all, the WRC aims at a 10 to 15 year construction period for its state-local flood control program. This would require an increase of the present annual appropriation of $1 to $1.5 million just to provide for the direct state contribution. Presumably, the legislature will authorize a loan fund to provide the local share.

Another aspect of state aid for flood control is a $1.75 million fund given WRC with which to reimburse municipalities for a portion of the latter's repayment shares of federal projects, which includes the recently expanded Bush-McCormack Act "hurry-up" projects (ENR Dec. 12, 1957, p. 142) as well as regularly Congressionally authorized projects. Standard sharing arrangements have yet to be set up between state and towns.

• **Beach erosion program**—The third major phase of Connecticut's current state Water Resource Development Work is a $1 million a year beach erosion construction program. It got going in 1955 before the August catastrophe, but has been aided psychologically by the public's flood consciousness.

In the first two years ending June, 1957, 11 projects totaling $2 million were completed or contracted for. The 1957 legislature appropriated another $2 million for 14 projects carrying through to 1959.

Projects generally consist of sand fill on a 20:1 slope to build up beaches to about 100 ft in width at mean high tide. Groins of sandtight stone core and large rock facing are built as needed to protect the new beaches.

Financing is similar in principle to the procedures in many other states, whereby the federal government contributes one-third the cost for a "public" benefit, the state one-third and the community one-third. If the beaches are restricted to local residents, the state's share is one-third and the community pays two-thirds. If the beaches are privately owned, the shares remain the same, but the town usually assesses the property owner. Note that the state contributes toward an improvement of private property.

All of the construction money is provided by the state, through the Water Resources Commission, which allows jobs to be let without delay. Federal reimbursement usually is received in a reasonable time, while the local share can be repaid in up to 20 years.

Vital to the program's success are official local beach erosion boards, similar to and in some cases identical with, the local flood control boards. These boards handle all business at the community level, including money raising, and thus function very effectively to keep WRC out of sticky local political situations.

Early planning of the needed projects was done in the early '50's by the Corps of Engineers Beach Erosion Board under a matching state-federal fund of $150,000. After the Connecticut legislature set up the construction program in 1955, the Corps advised on the design and construction of the first project. Since that time, WRC has used the state Department of Public Works as design and construction agent. Incidentally, under the state law, WRC can condemn private beach property if it lies in the middle of what would be a desirable continuous stretch of public beach.

• **Commission's role**—From the foregoing description of the Water Resources Commission's management of Connecticut's flood plain zoning, flood control and beach erosion programs, one would suspect that the commission is a mammoth agency, particularly when considering its additional, and earliest, responsibility for regulating industrial waste treatment in the state. Actually, Director Wise has only 12 staff members: Chief Engineer John J. Curry, two hydraulicians, four sanitary engineers, one construction inspector and three clerks, with two engineer vacancies at the moment. The Commission itself is composed of seven members representing a wide variety of interests.

The Commission was formed in 1925 to administer the then created state pollution control law. Since the state Department of Health already had authority to approve design and operation of municipal sewage plants, WRC devoted its major effort to industrial waste treatment enforcement. Although the dual responsibility for municipal treatment may not be the best setup in theory, the municipal program has been well administered.

In 1939, a state Flood Control and Water Policy Commission was formed to coordinate federal activities and carry on minor projects on navigable waters at the local level. Also in this year, a state Commission on Dams was set up to inspect and approve the multitude of existing and planned small industrial dams in the state. Since 1939, no dam has failed during a flood (although the overtopping of many dams contributed considerably to the 1955 disaster). Through the years, the state Water Resources Commission has coordinated the activities of the three separate agencies (with Mr. Wise serving in key posts in all of them). Finally, in 1957, the flood control and dam commissions were merged into WRC.

• **Guiding hand**—It is readily apparent that the fortunes of Connecticut's water resource development revolve around veteran water engineer Wise. A 1923 sanitary engineering graduate of MIT, he was with a consultant and a private water works company before joining WRC in 1928. He was made chief engineer in 1942 and director in 1952, and continued as director of the enlarged WRC in 1957.

Tru-Stop Brakes

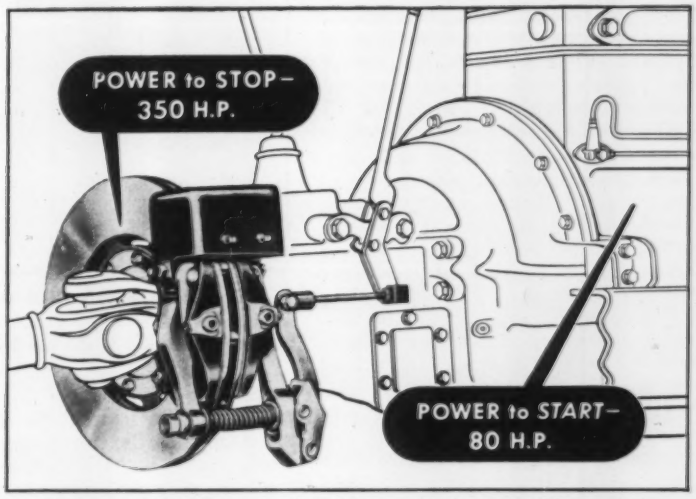
Meet Every Heavy-Duty Safety Requirement

OFFER POSITIVE PROTECTION AGAINST RUNAWAY OR PARKING ACCIDENTS—AT LOWEST COST

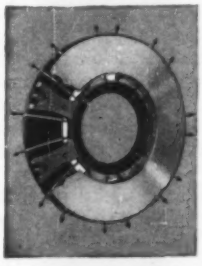
HERE IS WHY:

They have surplus power required for emergency service—no dangerous self-energizing

TRU-STOP Heavy-Duty Emergency Brakes are not only excellent parking brakes. They serve as a complete, independent and fully reliable braking system. Operating on the propeller shaft they enable the driver to continue on safely in the event of service brake failure. TRU-STOP brakes have the surplus braking capacity to be used *repeatedly* as an auxiliary to service brakes.

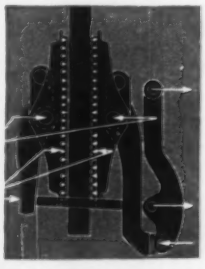


Brakes actually do more work than the engine in terms of horsepower Where it takes 80 HP to accelerate to 20 miles per hour, it takes 350 HP to make a safe stop from 20 miles per hour within required limits



Ventilated to throw off heat

Brake efficiency depends on ability to throw off intense heat —rapidly. Discs of TRU-STOP brakes are exposed to the air even during the braking operation. Ventilated design circulates air *between* the disc plates.



Give uniform brake pressure

Disc of TRU-STOP brakes is "squeezed" between the flat surface of the shoes. Effort applied to brake lever operates front and rear lever arms simultaneously. Pressure is exerted on the center of each shoe. Entire lining surface is in contact.

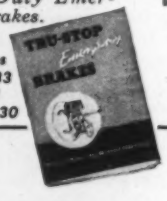
FOR SAFE, ECONOMICAL, HEAVY-DUTY BRAKING WITH MAXIMUM LIFE AND MINIMUM MAINTENANCE

TRU-STOP Brakes are used on a great variety of mobile and stationary equipment

SUCH AS—

- Motor cranes
- Road rollers
- Dump trucks
- Power dividers
- Cooling tower fans
- Oil well pumps
- Cold header presses
- Scrubbing machines
- Wire rope stranders
- Fork lift trucks
- Motor scrapers
- Tractors
- Graders
- Diamond core drills
- Electric locomotives
- Oil well servicing rigs
- Railway inspection cars
- Shapers
- Power take-offs
- Winches
- Motor shovels
- Tractor loaders
- Conveyors
- Hard rock drill positioners
- Mine locomotives
- Power presses
- Railway power ballisters
- Cable tool spudders
- Aerial tram cars
- Tension wire stringers

We will be glad to answer any questions or give you more detailed information about TRU-STOP Heavy Duty Emergency Brakes. Send for Catalogs DH-33 and DH-530



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ACCO

Computer Checks As-Driven Pile Groups

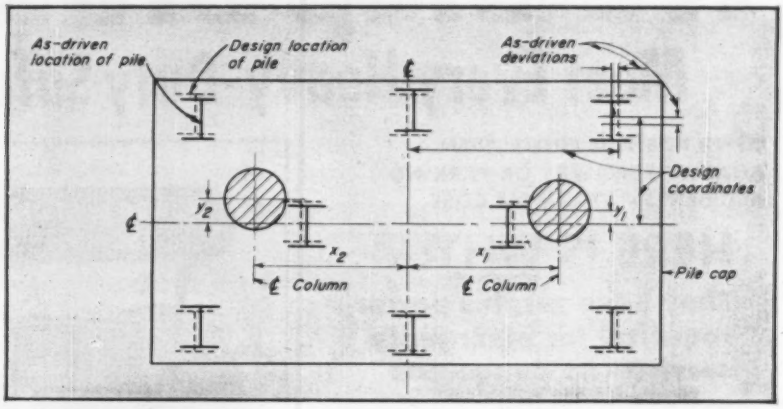
Peter T. Gavaris
King & Gavaris
Consulting Engineers
New York, N. Y.

During one of those informal conversations that so often spark important developments, a representative of Spencer, White & Prentis, Inc., one of the nation's leading foundation contractors, inquired of a member of our firm as to the feasibility of making pile group analyses by electronic computer. As is standard on most pile jobs, Spencer, White & Prentis was faced with calculating the maximum loaded pile in a group in which driven locations deviated from design locations within allowable tolerances.

Our computer personnel—though normally engaged in bridge and highway work to support our main consulting engineering function—found the pile group analysis exceedingly simple to program. They succeeded in writing and debugging a program in exactly three days. Then, one morning, the contractor turned over the records of 400 piles for 110 footing caps. The next day he received his answers. Subsequently, after a few spot checks by manual computation by the inspecting agency, New York City's Building Department, the complete output of the electronic computer was accepted.

The 110 pile group analyses would have required 75 engineering manhours by manual methods. Preparation of input data for the computer by clerical personnel of our firm required 8 manhours. The computer itself ground out the answers in precisely one hour and fifteen minutes.

This pioneering effort was performed in connection with construction of the Lenox Terrace Apartments in Manhattan boro of New York City. Fifteen different types and sizes of footings were involved. The New York City Building Code allows up to 3 in. deviation of driven location from design location, provided the load modifications of the piles in each group are calculated to determine whether additional piles or corrections to the column load distribution are required.



MAXIMUM LOADED PILE in a group in which driven locations vary from design locations is produced by computer. Program can accommodate groups of 30 piles suppporting 5 column loads. It also can be used in design.

• **Computer program**—Input data required for the electronic computation of the pile group design analysis falls into two classes. The first consists of the general data for all pile caps as shown on contract drawings and includes design coordinates of all piles within each group measured from the design axes and identification and number of piles of each type. The second class of input data includes the individual data for each pile cap. Deviations in driven locations for each pile are taken from the pile driving records. Design loads on each individual footing are obtained from column-load schedules in the contract drawings.

The computer makes the pile group analysis following the classical method of determining:

1. A new center of gravity for the deviated piles.
2. Moments of the column load or loads due to eccentricity in both directions.
3. Summation of squares of location coordinates of each pile in both directions.
4. Pile loads for each pile within the pile group evaluating the effects of concentric load and of the eccentricity moments in both directions.
5. The maximum loaded pile and its location after a search within the computer.

Spencer, White & Prentis wanted the results in step 5. The computer, therefore, received a command at this particular step to print the answers for each pile group.

As now written the program is suitable for pile groups with as many as 30 piles and 5 column loads. With slight modifications, it can be made to print out additional results of the pile group analysis, including:

- Moments due to eccentricity in both directions.
- Actual load on each pile within the pile group.
- Percentage of maximum pile load as compared with maximum allowable pile load for every pile within the pile group that is overloaded.

Although this first application of electronic computation to pile group analysis proved to be successful for contractors, the computer program, with minor modifications, also can be used for design purposes.

Charles P. Tung, holder of a doctorate in civil engineering, is chief programmer for King & Gavaris.

Connecticut Airport Work Will Provide Jet Runway

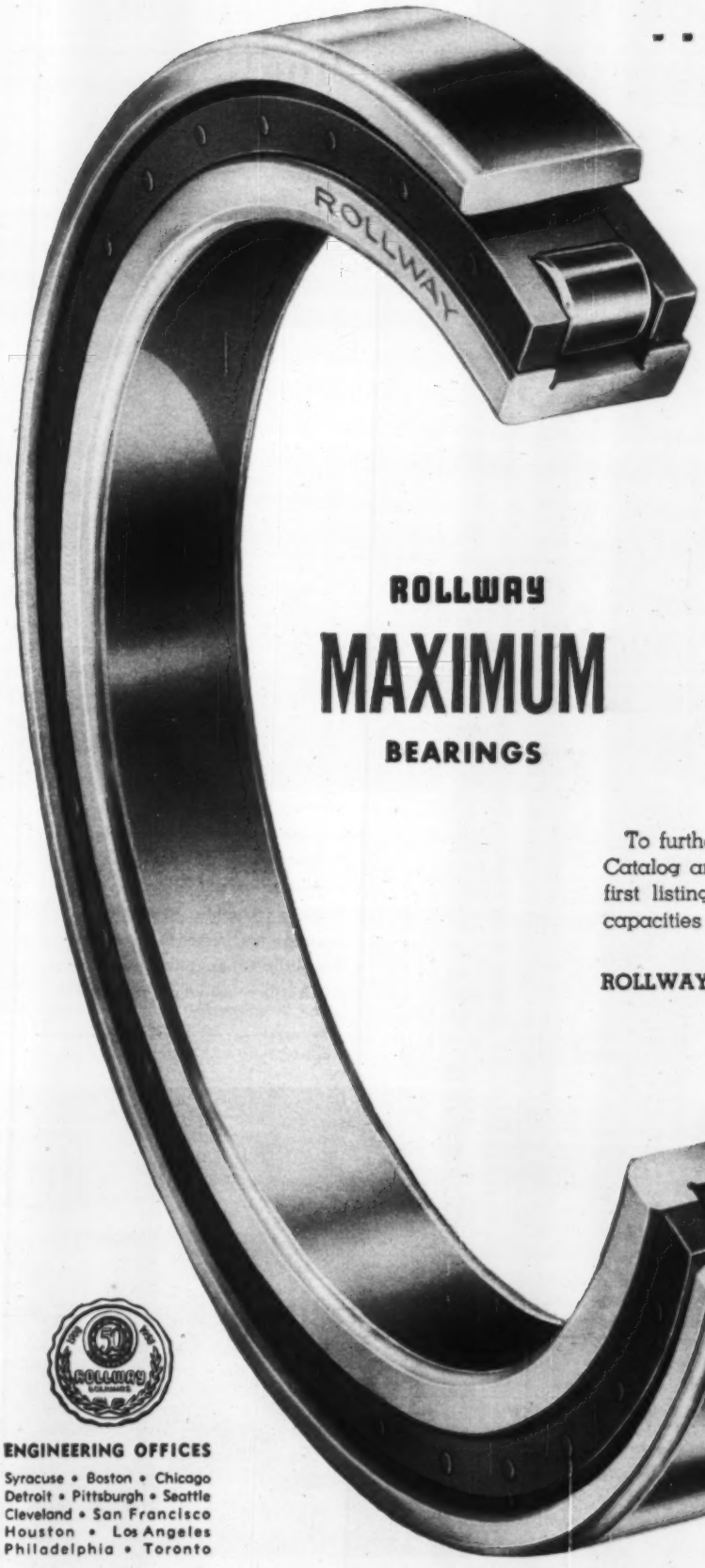
As a result of a series of rapid developments whereby the Connecticut State Department of Aeronautics matched $850,000 in federal funds, Bradley Field, at Windsor Locks, Conn., will have a 9,500 ft, $1.7 million jet runway before the end of the current fiscal year.

At a special session in Hartford the state legislature—to take advantage of the federal money—quickly approved a half-million dollar bond issue to be added to $350,000 already appropriated.

State Aeronautics Director Horace B. Wetherell said the National Guard Bureau informed him the money is available, but that it must be under contract before the end of the fiscal year. The state must have the project awarded not later than June 15.

The construction job is a 2,800ft extension of an existing 6,700 ft runway, with plans drawn to include a 400 ft portland cement concrete section at the end of the runway to meet military requirements. Also included is a large circular concrete holding pad to allow servicing of jet transports without danger of chewing up asphalt pavement. In addition to the extension, the existing runway will be strengthened with a 2 to 3 in. topping of bituminous concrete. The runway is expected to be ready for operation by spring of 1959.

John G. Mozzochi & Associates, Glastonbury, Conn., consulting engineers, has drawn plans for the runway.



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- **A broad range of types and sizes, numbered in the thousands**
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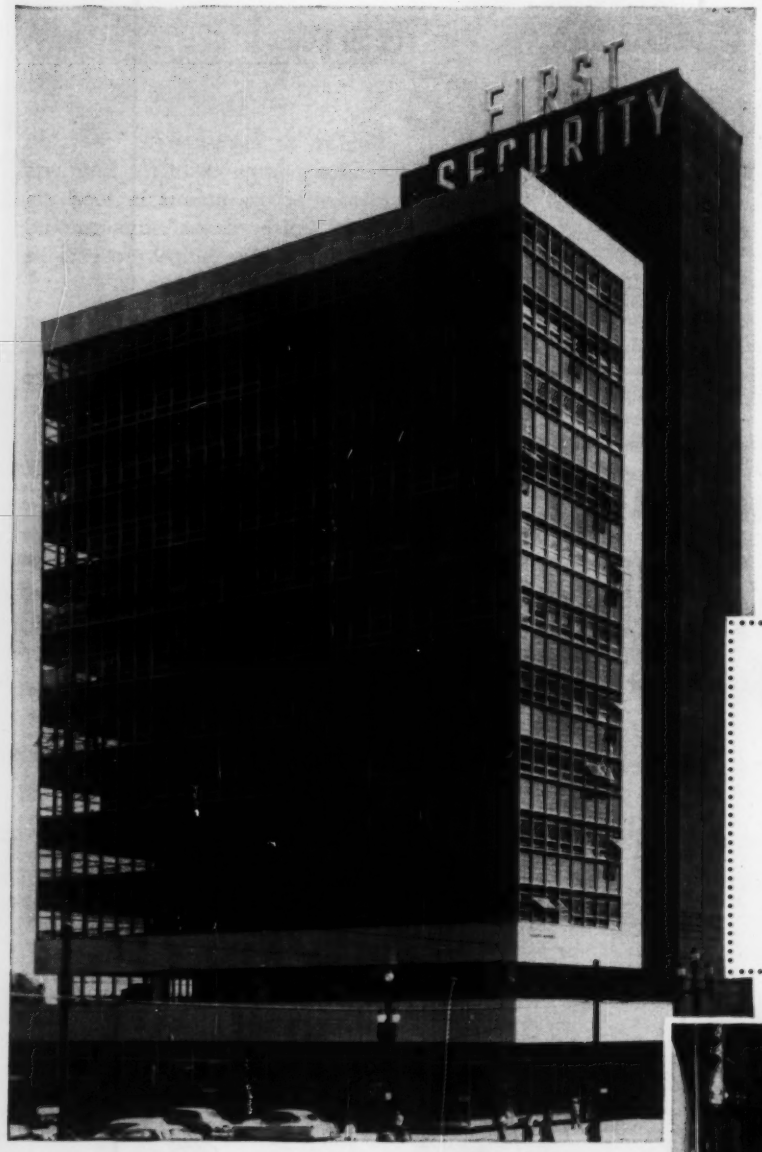
For FIRST SECURITY . . . The security of *steel pipe* heating *and* cooling!



Salt Lake City's new First Security Building is ultra-modern in more than just appearance. It features dual zone air conditioning in which *steel pipe* serves for the steam, chilled water and condenser water lines throughout the 12-floor *heating and cooling* system. Nearly a mile of steel pipe—40,000 pounds—from the basement boiler and chiller installation to the penthouse condensers was required.

Steel pipe is first choice for wet heating . . . proved in almost 70 years of hot water and steam heating applications. Its extended use in modern dual systems for *cooling* as well as heating results, logically, from that acknowledged superiority.

Yes, for heating and cooling, snow melting, fire sprinkler systems, plumbing, power, steam and air lines, irrigation, and structural purposes, it is the most widely used pipe in the world!

Only Steel Pipe gives all these advantages!

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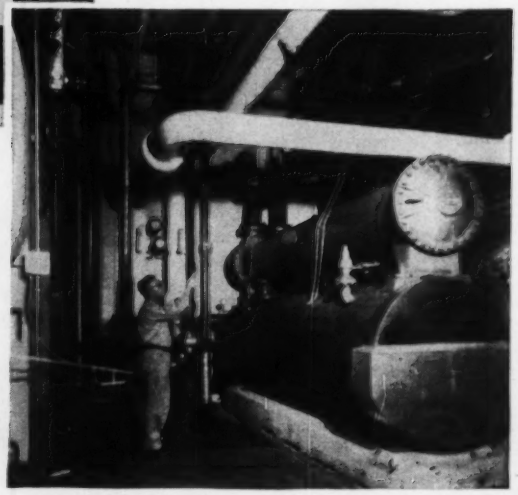
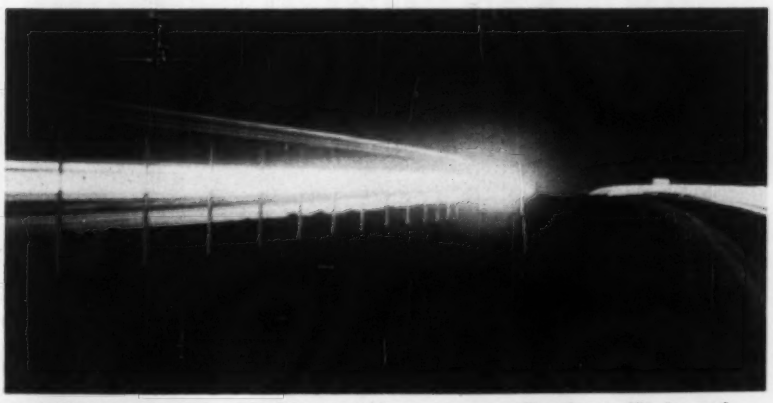
- Sound joints, welded or coupled
- Grades, finishes for all purposes
- Available everywhere from stock



Steam boiler and water chiller equipment for the dual zone air conditioner are compactly housed among this maze of steel piping.

Steel Pipe is First Choice

Committee on
STEEL PIPE RESEARCH
AMERICAN IRON AND STEEL INSTITUTE
150 East Forty-Second Street, New York 17, N. Y.



HEADLIGHT GLARE was blinding at a highway curve near Fort Lewis, Wash. until . . .

ANTIGLARE FENCING was erected to block view from opposing roadway.

Fence Makes Glare Barrier

Experimental installations of special fencing on highway median strips have convinced Washington State highway officials that headlight glare can be economically and efficiently reduced where desirable.

A new glare barrier, which resembles snow fencing, consists of wood slats held together by diagonally woven wire. Two installations have already been made successfully. One, shown above, is on an inclined curve of the Pacific Highway near Fort Lewis.

The glare fence has been put to another use on a section of State Highway No. 14 at Sinclair Inlet east of Bremerton. There, at night, a reverse curve on the side of a hill creates a hazard. Drivers headed for Bremerton see headlights coming directly at them from beyond the button hook curve and tend to think the road is straight, whereas actually there is a 30 ft drop ahead. So at this point the fence has been erected, not to prevent glare, but to block off the misleading view of oncoming vehicles.

According to W. H. Bugge, director of highways, other installations will be made when similar problems of glare or possible driver error are encountered.

On-Ground Assembly Of Pipe Pays Off

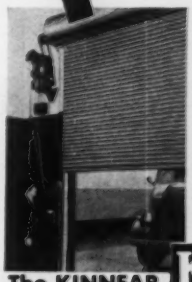
Welding and testing a complete heat distribution piping system on the ground before laying it into its trench has been found to pay off.

At Truax Air Force Base, Madison, Wis., C. A. Hooper Co. assembled and tested at ground level several runs of 500 ft—weighing some 30,000 lb—of underground heat distribution piping, 14 in. dia welded steel casing units with 8 in. dia inner pipe.

Using three cranes on one half of each run, including one expansion loop 26 x 18 x 26 ft, the piping was lowered into a 4 ft deep trench.

This method eliminates bell holes and allows the contractor more freedom in scheduling operations. In addition, work that ordinarily is completed in a trench can be done without the space limitation.

Kinnear Rolling Doors



Kinnear originated the upward-acting door with the curtain of interlocking steel slats. For more than half a century, Kinnear has built doors exclusively—your assurance of highest quality. Write for Kinnear catalog!

The KINNEAR Manufacturing Co.
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KINNEAR ROLLING DOORS
Saving Ways in Doorways

NEW!

Pour footings and walls at SAME TIME

New Economy Footing Forms, combined with regular EFCO Forms, permit pouring footings and walls in one operation. Save time, money, materials.

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Please send literature on Economy Footing Forms, and address of nearest sales office.

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W. Hodgman & Sons, Inc. tells why

"We've pretty well standardized our

Out of 15 motor graders operated, 13 machines are all of one make

"We've pretty well standardized our grader fleet," reports Kenneth Hodgman, Secretary-Treasurer, W. Hodgman & Sons, Inc., Fairmont, Minn. "It's always nice to standardize when you can, because of the savings in parts stocks, faster and easier servicing, and so forth. We've stuck pretty much to Adams† machines, because we've always had good service out of them. And our fellows all like to operate Adams.

"We've been Adams users since 1931, when we bought our first 2 Adams graders . . . 2 No. 51's. We just retired one of those original ones; the other we still use. We now have 2 new Power-Flow 660's, 3 regular '660's', and the rest are '610's' . . . 13 Adams in all. We also have 2 non-Adams."

Use one new grader instead of 2 older machines

"These new Power-Flow 660's really move a terrific windrow. In some cases one of these machines takes care of the same kind of job

†Trademark

ADVERTISEMENT

grader fleet"

we've always handled with two '610's' with 100 hp each. That doesn't exactly mean that they do all the work two '610's' will do. But you need only one — not two — to do the complete job.

"We've had no downtime to speak of. And parts-wise, so far, we haven't spent a nickel on the torque-converter '660's'. Our daily fuel consumption is up, of course, because we are accomplishing a lot more work. Right now I don't have any figures. But watching them move the big windrows, I'd say the Power-Flow is actually cheaper to operate than conventional gear machines. We're now planning to trade-off some more of our older '610's' for new Power-Flow's."

Says Howard Pihlaja, Foreman . . .

"I have never seen anything work like this Power-Flow 660. There is nothing you can't handle with it . . . the best part is the steady power supplied by the torque converter. Also like the forward-reverse shift with foot control."

Road base contractor operates in 6 states

Two million tons of base is a lot of stone and gravel. Yet that's the figure W. Hodgman & Sons, Inc., Fairmont, Minnesota, gave as a measure of its minimum annual road-building business. The company operates mostly in North Dakota, Minnesota, and Iowa; also handles large contracts in Wisconsin, South Dakota, and Colorado.

Hodgman & Sons is primarily a base contractor, with over 26 years' experience in the business. In addition to base work, contractor also supplies asphalt road surfacing where specified. The company operates 4 hot-mix asphalt plants producing over 300,000 tons annually; also handles about 100 miles of bituminous road-mix surfacing a year.

1957 contracts over $4½ million

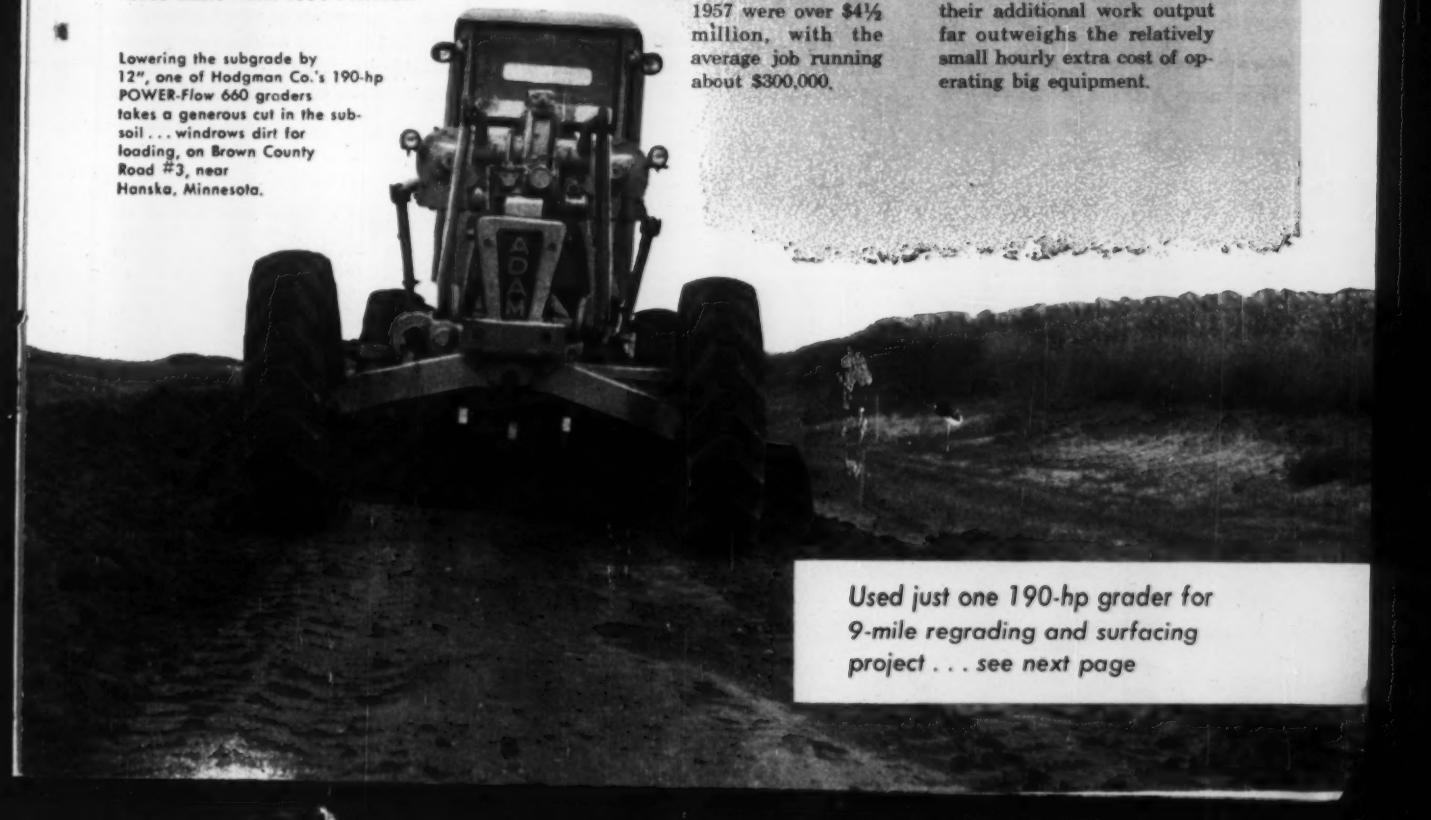
State jobs provide the bulk of Hodgman's work, with large city and county projects making up most of the balance. Company likes to bid jobs in the $200,000 to $1 million range. Total contracts for 1957 were over $4½ million, with the average job running about $300,000.

All major dirtmoving is let to sub-contractors in that field. While Hodgman owns 4 or 5 scrapers, they are used only for minimum cuts, mostly for clean-up, finishing, etc. The company's main work starts with the finished sub-grade. Hodgman lays the road base or bases, then applies asphalt surfacing . . . usually 24' wide . . . and of the thickness specified.

Big Adams fleet cuts cost

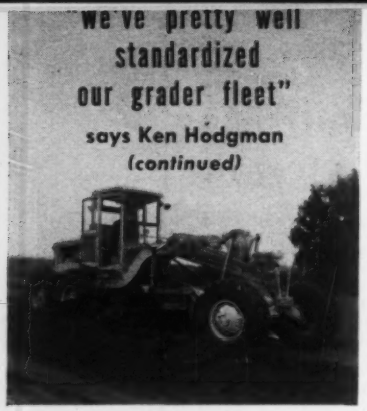
In Hodgman's fleet, motor graders are a principle item of production equipment. The company operates 15 motor graders . . . 13 Adams, 2 of other makes. Because the firm has practically standardized on Adams machines, it gets most of the money-saving benefits of a "solid" fleet: easier and faster servicing, low-cost parts inventory, operator interchangeability, etc.

Latest addition to the Adams fleet are two 190-hp POWER-*Flow*® 660's. The company is turning more to the heavier machines, because it finds their additional work output far outweighs the relatively small hourly extra cost of operating big equipment.



Lowering the subgrade by 12", one of Hodgman Co.'s 190-hp POWER-Flow 660 graders takes a generous cut in the subsoil . . . windrows dirt for loading, on Brown County Road #3, near Hanska, Minnesota.

Used just one 190-hp grader for 9-mile regrading and surfacing project . . . see next page



Foreman Howard Pihlaja says further:

"I believe Power-Flow 660's have the most efficient set-up on a torque converter that's possible. Temperature of the torque converter oil never gets too high. With a competitive grader, on a hard day's pull, the oil goes up to 220°. This Power-Flow converter fluid runs between 160° and 180° . . . 190° at the most.

"In a day of comparable work, doing the exact same jobs, round for round, I don't think this '660' would use any more fuel than a big '660'. And laying a mat takes just a few more passes than a mix job. Yesterday I laid 3 miles of base . . . and that's a lot of gravel in one day. I got out on the job about 8 AM, and was done a little after 6."

"Nothing this POWER-Flow grader

reports Ray G. Lloyd, operator...

Veteran of 21 years' operation likes Adams performance

"I've been with Hodgman & Sons for 21 years, operating 'blades' most all the time. I've run Adams, Caterpillar, Galion, Austin-Western, and A-C patrols. I prefer Adams graders because I like the way they perform . . . they do everything I expect a blade to do."

Always works faster and easier

"This new Adams Power-Flow 660 is an improvement over all graders before. There's just no comparison! I've never run into anything this Power-Flow won't do. I've worked it against other machines, and it always does the work easier and faster.

"In mixing, the old girl really shines. It only takes about 4 passes to mix a windrow with this

Forward-reverse power-shift saves time

"The feature I probably like best on this Power-Flow is the foot pedal for forward-reverse shift. When you have both hands full with your controls and steering, you don't have to bother about shifting gears, and waiting for the transmission to stop to make your

Big 190-hp POWER-Flow 660 grader, with operator Ray Lloyd at controls, scarifies at full tooth depth . . . rips-up gravel and stone road surface for regrading. Here, on Minnesota's Brown County Route #3, grader cut 12" off the top, before laying 9" gravel base and 1½" road-mix topping.

POWER-Flow 660 cuts tough subgrade material, windrows to center of road for removal. Crawler-mounted front-end loader filled dump trucks, which hauled excess material to widen shoulders and backfill around culverts at other points along the 9.2-mile project.

regular grader. Actually, working with 50 more horsepower, it uses a little bit more fuel oil . . . but it handles more work. If you figure the hourly cost, and discount it by the shorter time it takes '660' to work a mile, you'll find it costs less than with a standard grader."

won't do"

gears mesh. All you do is give the pedal a flip with your foot, and you can reverse or go forward. That speeds-up the operation — and it's much easier on me."

No problem of clutch adjustment

"Another thing, with torque-converter '660' I don't have to worry about clutch adjustment. If you're hogging it, or doing work where you have a tendency to slip your clutch, you could develop trouble with a friction clutch. With this torque converter, I use only my throttle to control speed . . . just don't have any clutch to slip."

One 190-hp grader for 9.2-mile Minnesota project

Action photos here show a POWER-*Flow* 660 at work for W. Hodgman & Sons, Inc., Fairmont, Minn. Here this powerful grader is scarifying and blading on 9.2-mile widening and resurfacing project on Brown County Road #3, between Hanska and New Ulm, Minn. Hodgman, prime-contractor, brought in just one torque-converter "660" to handle all the grader work.

Cut 12" thru old surface

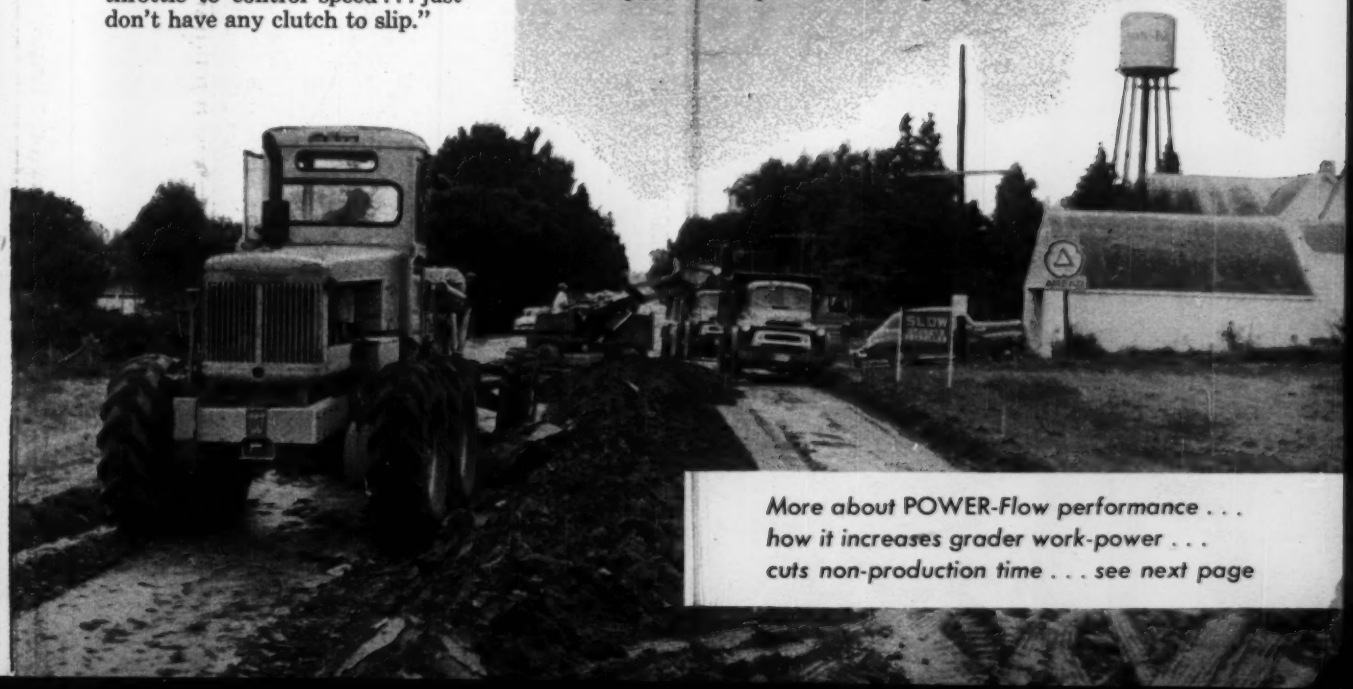
On this section, the old gravel roadbed was too high for adding the specified 9" of base and 1½" road-mix topping. So the big "660" with 5-tooth scarifier, ripped-up the gravel and rock surface . . . cut 12" down to sub-grade . . . windrowed the material in the middle of the road. A front-end loader heaped the spoil into dump trucks, which hauled it down the road to backfill culverts and widen shoulders where needed.

Maximum push-power from a dead stop

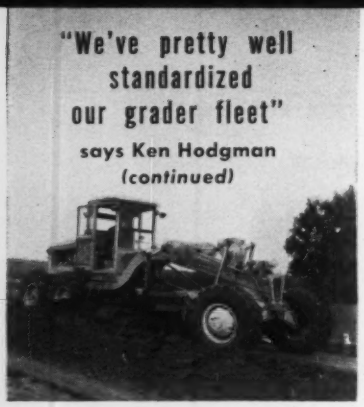
Veteran operator Ray G. Lloyd worked the POWER-*Flow* entirely in 2nd gear-range, 0.0 to 7.6 mph. Because grader can develop full-rpm push-power from a dead stop, he dug right in for maximum cut . . . easily started the load. He continued at full power as he accelerated with grader's torque converter automatically apportioning more horsepower to forward motion. Working continuously at top-rated power, grader always scarified deep . . . always cut a full blade-load . . . always produced at maximum pace for each particular load.

Protects grader, operator, in rocky soil

Surface and subsoil rocks were a hazard — but they didn't bother the machine or operator Lloyd. Whenever the grader hung-up on a rock, "660's" torque converter cushioned the impact. There was a quick deceleration and a moment's hesitation, before the governor would start to feed more fuel to step-up engine rpm. This gave Ray Lloyd time to either stop and back-up for a new "bite" . . . or to quickly reduce depth of blade or scarifier. Thus he could work fast, without fear of getting himself "banged-up", or of damaging blade, engine, or transmission.



More about POWER-Flow performance . . . how it increases grader work-power . . . cuts non-production time . . . see next page



"We've pretty well standardized our grader fleet"

says Ken Hodgman

(continued)

Operator Ray Lloyd says further:

"We have a lot of rocks and boulders in this country. When I hit something solid, this Power-Flow machine slows-up and kinda gives with it. If I hit a rock, or hook a curb and gutter, it doesn't throw me, smash anything, or rip-up a curb. When it hesitates, I can adjust the controls or stop the machine. Saves a lot of wear-and-tear on the blade and gears."

Maintenance and fuel costs low

"I'd say there was close to 1000 hours on this Power-Flow. There hasn't been any maintenance on

Adams POWER-Flow 660...Go-power to

On every one of your roadbuilding and production dirtmoving jobs, the GO-power of an Adams POWER-*Flow* 660 grader cuts costs, and increases your profit. Big "660" gives you more push-power, completes tasks faster, spends more time on dollar-producing work . . . reduces grading cost per mile of road, or per yard of dirt. It gives you the precision, and easy-operating advantages of a standard (fixed gear-ratio) "660", plus:

- 27% more engine power
- Torque-converter drive
- Forward-reverse power-shift

Cuts deeper, pushes heavier loads

POWER-*Flow* 660's push-power is not limited by low-rpm engine power in fixed gear-ratios. You can apply "660's" full 190 hp at any speed . . . even from a dead stop! Torque converter gives you the effect of *infinite* gear ratios . . . multiplies torque for starting big cuts and heavy loads, for smoothing out unexpected resistance as you move the dirt. A tail-shaft governor automatically adjusts engine speed (and thereby, the torque multiplication), to produce whatever power you need, for pushing the load at speed called for by the throttle-setting. Engine never lugs . . . never stalls.

Works at fastest rate possible

With throttle at maximum setting, you get full power for the initial thrust to start the load. Then as the dirt starts rolling, grader picks up speed. As less-and-less power is needed for "push", "660's" torque converter automatically apportions more-and-more horsepower to working speed . . . matches power to the load . . . brings grader up to *fastest possible pace* for each bladeful.

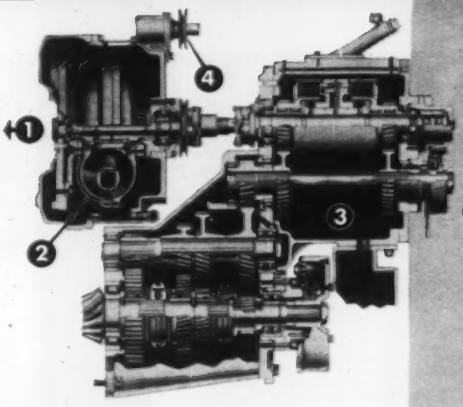
Less non-productive time

POWER-*Flow* also produces more work because it "keeps its nose to the grindstone" . . . wastes less time in travel and maneuvers. Between work assignments, or between tasks on the same job, 190-hp "660" travels at up to 27.4 mph . . . gets on the job fast . . . begins work sooner, finishes it sooner. And, on one-way blading, this grader backs-up at fastest practical speed (to 24.4 mph) . . . starts the next "pass" while other graders are still lumbering back to the beginning of the cut.

On Brown County (Minn.) Route #3, POWER-Flow 660 grader cuts new sub-grade for W. Hodgman & Sons, Inc., Fairmont, Minn. Grader's torque converter matches power to the load . . . always moves dirt at fastest possible rate for each particular blade-load.

it, except for greasing and oiling.

"There's not much difference in fuel consumption between this '660' and friction-clutch graders. It can do the same work as other machines . . . but so much easier and quicker. So, in spite of a small plus in cost, I feel it's actually more economical."



1 190-hp engine:

your choice, Cummins or General Motors diesel.

2 Torque converter:

single-stage type; multiplies load-starting torque 3-to-1 . . . gives effect of infinite gear ratios for continuous full-rpm operation . . . absorbs load shocks and prevents the engine from stalling.

3 Forward-reverse power-shift mechanism:

hydraulically operated clutches — controlled by 2-position foot-treadle — engage forward or reverse gear-sets for instantaneous change of direction, without hand shifting.

4 Tail-shaft governor:

automatically changes fuel setting to maintain constant grader speed, as pre-selected by operator.

boost contracting profits

No delays for hand-shifting to change direction, speed or power

Under normal conditions, your operator starts-off by shifting to the POWER-*Flow* gear-range suited to the type of work. Thereafter, he almost never *hand*-shifts gears again, till the job is done. Here's why:

a. Torque converter automatically provides whatever power-speed ratio is needed to handle changing work loads, as described previously.

b. Foot-operated forward-reverse power-shift permits *instant* change of direction . . . keeps operator's hands free for uninterrupted control of blade and throttle. Toe-pressure on the center-pivoted, 2-position foot-treadle shifts "660" into forward. Heel-pressure shifts it instantly to reverse.

There's no delay, no apparent stop, as grader changes direction . . . forward or reverse. For example, at the end of a one-way cut, your operator simply rocks his heel back on the treadle. POWER-*Flow* automatically power-shifts from forward to reverse, in the same gear-range . . . and without declutching. There's no waiting for gears to slow-down . . . no stopping while busy hands perform many functions. POWER-*Flow* 660 works, maneuvers . . . seldom stops. It produces more per hour . . . boosts your profit on grader operation.

SEE IT WORK:

To really appreciate the GO-power of this machine — its extra work-power and cost-cutting speed — you should see it in action. Write or call us, and we'll set up a date for a demonstration. There's no obligation, of course.

G-1790-DCJ-6

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Ribbed siding of Alcoa® Aluminum gives a trim, clean-lined appearance to Westinghouse Electric Corporation's new 250,000-sq-ft plant in Dover, New Jersey. Embossed to a soft-toned texture, the siding adds exceptional beauty to the industrial landscape.

Maintenance-free Alcoa Aluminum stays good-looking longer, too. It never needs painting or expensive repairs, resists humidity, industrial fumes and other corrosive agents. Lighter weight makes it easier and faster to erect; foundation and framing requirements are reduced, and fewer men and machines are needed on the job.

GET MORE INFORMATION on economical Alcoa building sheet in ribbed, corrugated and V-beam configurations. Applied by Alcoa Approved Applicators. Contact your local Alcoa sales office for the name of your nearest Applicator, or write Aluminum Company of America, 860-S Alcoa Building, Pittsburgh 19, Pennsylvania.

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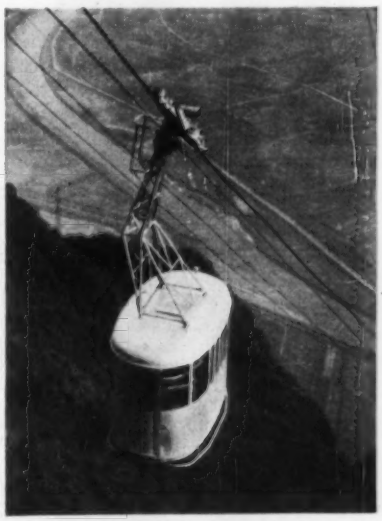

CABLE CAR with capacity of 40 passengers makes the trip in 4 minutes.

STEEL PYLONS support the cable strands at two points along the two-mile stretch.

Cableway Is Europe's Highest

A cable lift system so long that an additional 300 ft of line would have made it an impossibility began operations recently at Mount Paganella, Italy. And to support the 2 mile cableway with its 4 minute climb to the 6,300 ft mountain peak, only two pylons are used.

These two pylons, of 22 and 100 ft heights, support three cable systems. The heaviest of these cables is the 2 in. dia one that supports the cable car during its trip. The drive cable that gives the power to drag the car along its path has a 1.1 in. dia. The third is an auxiliary cable that measures 0.6 in. in dia.

The 100 ft pylon is reinforced by rhomboidal-shaped struts. However, the 22 ft pylon is without this reinforcement.

The two-mile line carries a car that can accommodate forty persons plus a conductor along gradients of more than 1 on 2.

The two year construction job was done at a cost of $350,000, as a joint venture by contractors from the towns of Trente, Fai and Zambana. The state provided the funds for the cable lift to replace two 30-year-old installations at Zambana-Fai and Fai-Dosso Larici.

World Bank Advises Egypt On Suez Canal Widening

The World Bank has told Egypt it will provide technical assistance to advise the nationalized Suez Canal Authority on its short and long range canal improvement plans.

Acting as representative of the World Bank, Gen. R. A. Wheeler, who supervised clearing of the canal last year, already has completed a preliminary report on the prospect of canal traffic growth and on plans to meet traffic increases.

The SCA plans to dredge the canal to handle ships of 37 ft draft and up to 29,000 tons. Surface earthmoving on the east bank of the canal is already under way; dredging is expected to be completed in 18 months.

In the next 10 years, plans call for ships of 42 to 45 ft draft and 70,000 tons to be able to use the canal. The canal will be further deepened and widened or another canal will be dug parallel to the present waterway. By either plan simultaneous passage of two convoys in opposite directions will be possible.

However, any financial aid from the World Bank for major improvements must wait until settlement is reached between the Egyptian government and the old Suez Canal Co. At the moment, talks between Egypt and canal company shareholders have been suspended.

Canada's First Jetport Set for November Start

When work starts this November on a $20 million expansion of Toronto's Malton Airport, it will mark the construction of Canada's first fully jet airport.

Plans announced by the Department of Transport call for a minimum of four loading docks, each having doughnut-shaped two-story buildings to accommodate passengers for a number of jet liners. Each "island" terminal will have a central tower section with lounges and restaurants and parking space for 1,000 cars.

The design concept for the jetport includes a central administration building and control tower for the airport, plus controlled access highways to this central structure, and underground highways to the individual terminals. Two of the "islands" are to be completed by 1962, the other two by 1972.

A novel method of handling passenger traffic is being inaugurated at this airport. Instead of checking in at a central ticketing building, passengers will travel in their cars along subways underneath the taxi and take-off strips into the terminal building. Then they can take their car up to a rooftop or second-story parking station and take an elevator down to the boarding docks. And carrying passengers directly to the door of their jet liner will be 75ft telescoping ramps. A specially cantilevered restaurant in the central section of each terminal will project out and

ESTIMATING CONSTRUCTION COSTS

2ND EDITION JUST PUBLISHED—**Here are the practical considerations you need to make accurate estimates on engineering projects**—the understandable methods and helpful data you can use for realistic, sound estimating. Included in this revised edition is a more complete coverage of Workman's Compensation, other types of applicable insurance, performance bonds, costs of overhead, and profit. Over 100 time-saving tables help you make accurate estimates. **By R. L. Peurifoy, Prof. of Civil Engineering, A&M College of Texas. 2nd Ed., 438 pp., illus., $10.75.**

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over the top of the waiting aircraft.

To reduce the jet noise and to deflect the jet blasts, blast fences will form a third ring around the terminal areas. Some Canadian officials think that jet aircraft may even have to be towed to and from the buildings to alleviate the noise and blast problem.

In fueling the jet aircrafts, variation from the present tanker truck method may be made in some cases by using underground pipes to carry jet engine fuel to each loading ramp.

Handling of passenger freight and baggage will be speeded by preloading and directly loading and unloading baggage onto belly sections of the aircraft that will be carried intact to and from the jet plane.

The Toronto airport expansion program plans were worked out by John B. Parkin & Associates, Ltd., a Toronto architectural firm.

Oil Companies To Build Rotterdam-Rhine Pipeline

The Rotterdam-Rhine Pipeline Co., a joint venture of three big oil companies—N. V. Bataafsche Petroleum Mastschappij, The California Texas Corp., and the German Gelsenberg Mobiloil Trade and Transport Co—will construct a pipeline from Rotterdam to the Ruhr District. The firm has set up its headquarters in The Hague with a capital of more than $9.2 million.

The 24 in. dia line with an initial capacity of 7½ million tons per year will be laid from Rotterdam to Venlo. From there, two lines will diverge, one to Godorf and Wesseling. The other line will extend northeast to Wesel where it will be connected to an existing pipe to Gelsenkirchen.

Completion of the project is expected within two years.

AT THE AWARD CEREMONY in Mexico City for the Latin-American Tower were (l. to r.) T. R. Higgins, AISC; Leonardo Zeevaert, Mexican engineer; Clyde Conley, AISC, also president of Mt. Vernon Bridge Co., Mt. Vernon, Ohio; N. P. Hayes, AISC president, who made the award; and Jose A. Escandon, president of the Latino-Americana Life Insurance Co., owner of the building.

Mexico Building Cited for Quake Resistance

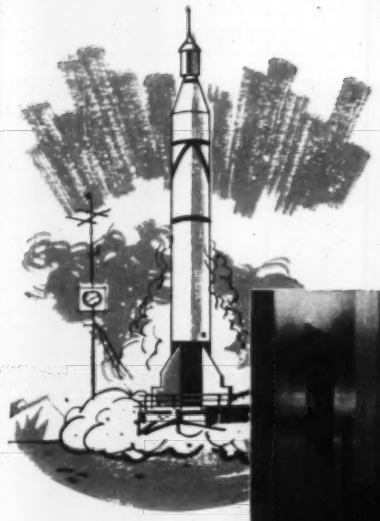
The American Institute of Steel Construction has bestowed its annual award of merit on Mexico City's 43 story Torre (Tower) Latino-Americana.

By coming unscarred through the country's worst recorded earthquake, which shattered hundreds of buildings in and around the Mexican capital last July 28 (ENR Aug. 1, p. 27 and Aug. 15, p. 38), the steel-framed skyscraper "dramatically demonstrated," to quote the words inscribed on a stainless steel plaque presented by AISC president N. P. Hayes to the owners of the building, "the wisdom and competence of those who planned its construction."

Built-in recorders on the 1st, 25th and 39th floors of the building registered sizable displacements during the quake, but the only damage was minor partition cracks. Mexico's tallest building and the tallest anywhere ever subjected to severe seismic shock, the structure was designed in accordance with principles of dynamic analysis.

The designers and engineers were Leonardo and Adolfo Zeevaert, of Mexico City, and Prof. N. M. Newmark, head of the Department of Civil Engineering, University of Illinois. Bethlehem Steel Co., Bethlehem, Pa., fabricated the 3,600 ton frame and Julio Jeffrey, Inc., of Mexico City, erected it.

(*International continued on page 68*)



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A typical example of how J-M Transitop panels economically and attractively partition miles of interior space at Patrick Air Force Base.

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While scientists experiment with shooting missiles into outer space, administrators at Patrick Air Force Base, Cocoa Beach, Florida, are faced with practical problems of enclosing space for earth-bound personnel.

Transitop panels furnished by Johns-Manville—seven-and-one-half miles of them—were used to provide headquarters space needs. These modern panels, used as interior walls, meet the many different requirements for administrative space control.

Transitop, an insulating structural panel, consists of an impregnated core faced on two sides with incombustible Asbestos Flexboard® sheets. Transitop is available in panels 4′ wide by 8′ up to 12′ in length.

Engineered for durability, Transitop is ideal for use as the interior surface for structural walls or as free-standing ceiling height walls. It also provides every requirement for insulated curtain wall construction.

For the complete story on Transitop, write to: Johns-Manville, Box 158, New York 16, New York. In Canada write: 565 Lakeshore Road East, Port Credit, Ontario.

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British Builders Predict Less Construction in 1958

British contractors believe 1958 will prove to be a poor year for their industry despite large backlogs. They also feel that 1959 will be a worse business year than 1958, based on recently published figures showing that the level of new business obtained is continuing a decline that started in mid-1957.

Private industry's building plans have been reduced substantially. New factory plans approved in the first quarter, at 11.8 million sq ft., were the lowest for any quarter since the end of 1953, and 2 million sq ft below the final three months of 1957. During the first three months of 1957, at the peak of the Suez crisis, new proposals approved totaled 13.6 million sq ft.

The Financial Times predicts that spending on housing, industrial building and other types of private work this year will be lower than 1957 expenditures. However, public outlays are expected to be higher.

Less than $1.5 billion will be spent for housing this year compared with the close to $1.6 billion in 1957. Industrial building expenditures will drop $70 million to $700 million and other private work will decline $5.5 million to $504 million.

According to the Financial Times, public outlays will total $1.1 billion compared with $1 billion in 1957.

There is a bright spot in the picture, however. Building costs which rose sharply in 1951 now are leveling off, according to industry sources. During the first three months of this year, the cost index for new construction and civil engineering work fell for the first time since the end of 1953 and was only a shade higher than in the corresponding period of 1957.

Labor costs are steady, while some material prices are starting to drop.

Russians Report Details Of Their Big Ural Blast

The periodical Soviet News has reported that on Mar. 25 over 3,000 tons of TNT in a single explosion moved 980,000 cu yd of rock to form a channel 3,800 ft long, 175 ft wide and 80 ft deep. Its purpose was to divert the Kolongas River whose water was infiltrating one of the iron ore mines in the area.

The Russians therefore claim the world's biggest non-atomic explosion, hard on the heels of the widely heralded Ripple Rock blast on April 5 which utilized 1,375 tons of nitramex 2H, a somewhat more powerful explosive than TNT (ENR Apr. 17, p. 26).

For pumping sand and metal tailings:

• From mixing pit, slurry of sand and tailings, 35% to 50% solids, is discharged by two Morris "R" pumps at 155 ft. head through 2200 ft. of piping. Rate: 1200 gal/min each.

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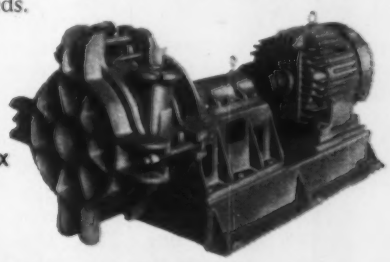
Centrifugal Pumps

There are limits to what the average pump can take. When sharp, abrasive mixtures or aggregates are handled, a toughness far *above* average is imperative. Morris metallurgists provide just the right degree of built-in toughness required for your pumping application.

CASE HISTORY: Reclamation of high-quality sand from automotive casting-molds has produced significant economies for one of the world's leading auto makers. Powering the re-circulated water system is a series of Morris heavy duty pumps. More than 600 tons of abrasive solids – sand, cast iron sprue, sea coal, clay – are moved through the system per 16 hour day. Since the installation of Morris pumps, maintenance has been reduced to six and twelve month intervals!

Wherever sustained pumping performance is a key to economy, call on Morris. Modern hydraulic design, durability and applications engineering combine to deliver a pump that is matched to *your* specific needs.



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Plastic Bubble Inflates . . .

. . . For Use as Storage Shed

"Mylar", a polyester plastic developed by du Pont was used in an air supported construction storage shed installed at their Chestnut Run plant recently. The dome was inflated in just 23 minutes.

The "Schjeldome", manufactured by the Scheldahl Co. is 60 ft wide and 30 ft high. An airlock in the side admits fork lift trucks without collapsing the dome. A pair of one horsepower electric blowers raises the dome and keeps it up.

The base of the bubble is secured with cable around an iron ring. The base ring is set in concrete for this installation, although wood stakes will do as well. Wind tunnel tests indicate that the dome will withstand winds up to 75 mph.

Light weight makes the unit easy to transport from one site to another. This dome, exclusive of air lock and fittings, weighs only 300 lbs. It was brought to the site in a station wagon. The 5 mil plastic combines high strength with clarity and durability. It is able to withstand temperature extremes and long exposure to direct sunlight.

Commercial uses of Mylar are numerous. In addition to low cost storage sheds and construction shelters, greenhouse costs are estimated at 50 cents vs $2 psf, using a simple frame and double wall application of the plastic. Economy plus ease and speed of installation are the chief advantages of the inflated plastic construction. Heat and light are unnecessary since the domes form solar heat traps. Initial material cost of approximately 11½ cents psf is offset by its long outdoor life, estimated to be 5 years.

The smallest "Schjeldome" is 20 ft across and costs $1,130. The largest dome available now is an oblate shape, 80x180 ft costing $14,789. E. I. du Pont de Nemours & Co., Wilmington, Del., and G. T. Schjeldahl Co., Northfield, Minn.

Transit-Mix Power Supplied by Flywheel

The Model M650T, a truck specially designed to carry transit concrete mixers, now is equipped with a flywheel power-take-off unit. Thus the truck's flywheel assembly furnishes power to operate the transit mixer.

The manufacturer says that this power package eliminates the costly and vulnerable linkage needed when mixer power is taken from the front of the truck's engine. Simplicity and location of the assembly are said to make inspection easy, reduce potential damage and minimize maintenance. Crane Carrier Corp., Tulsa, Okla.

New Adhesive Bonds Masonry Radiation Barriers

A bonding agent has been developed for concrete block radiation barriers. The adhesive has good compressive and shear strength. It also has low tensile strength, allowing disassembly for rearrangement or expansion of facilities without damage to the blocks. It is said to be radiation resistant, and contains a bright blue dye to assure uniform application without bond gaps.

The material is painted on the blocks. No mortar is needed. Unit-masonry doors can be constructed on rolling steel frames in the same manner. California Stucco Products of New England, Inc., Cambridge, Mass.

Compact Generators for Either Home or Job

Two new 3,000 watt portable generators, added to the Homelite line, weigh only 140 lb. They are the 115 volt, 60 cycle Model 8A115 and the 115/230 volt, 60 cycle Model 8A115/230. Their design includes 4% voltage regulation and large overload capacity.

The generators' construction eliminates DC brushes, commutator and DC armature windings to reduce maintenance. A Homelite two-cycle gasoline engine is coupled directly to the armature shaft. Homelite, Port Chester, New York.

Economy Model Offshore Drilling Platform

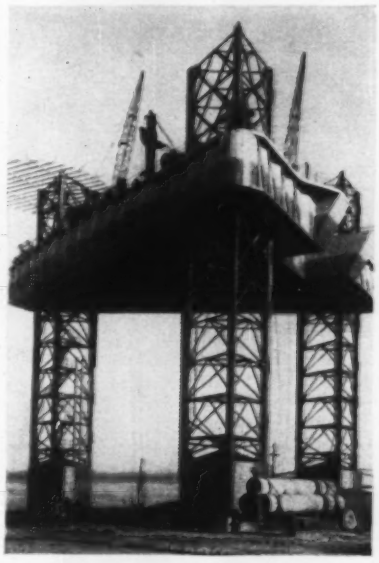
A new and unusual offshore drilling platform, built by R. G. LeTourneau, Inc., Longview, Tex., for Reading & Bates Offshore Drilling Co., Tulsa, Okla., has been christened at New Orleans. One of its chief features, according to the manufacturer, is economy.

Weighing about 3,000 tons and costing less than $2 million, the economy-model drilling platform is considerably smaller and less costly than other self-contained mobile platforms in the Gulf, yet capable of drilling to a 15,000 ft depth in 85 ft of water.

As shown on the right, the 150 ft triangular shaped hull, equipped to house and feed a 42-man crew, is supported by three 140-ft high triangular legs, or spuds. A 55 ft dia helicopter landing area is located above the forward leg, while a 26 ft wide slot between the rear legs accommodates the drilling derrick.

A 24 ft dia, 20 ft high spud tank at the bottom of each leg provides ballast during flotation and serves as a bearing platform during drilling.

In operation, the self-contained platform is floated to the drilling site and the 140 ft legs, or spuds, are lowered to the ocean floor by electric powered



motors geared to cogs extending along the edges of the legs. When solid footing has been gained, the hull of the drilling rig is raised above the water, climbing the three legs at a rate of 1 ft per min. Two 80-ft boom cranes are mounted on the deck of the platform.

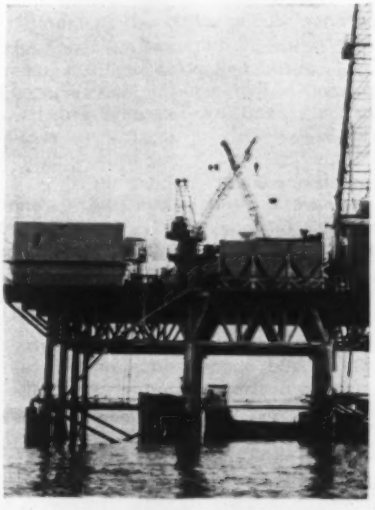
Modified Crane for Drilling Platforms

One of the most versatile pieces of equipment used in operating offshore drilling platforms—whether they are mobile, self-contained or tender type—is a rugged crane with medium length boom for handling personnel and materials from supply ship to platform deck.

A relative newcomer to this field is a revolving, stationary-mounted crane developed by Unit Crane & Shovel Corporation, by modifying a conventional ¾-yd crane excavator.

Throughout the development stages, the question of safe lifting capacity was one of major proportions. The lifting capacities of crawler and rubber tire mounted cranes are based principally on factors of stability. Consequently, when the upper structures of such machines are placed on a stationary mounting, greater loads can be lifted. At the same time the danger of overloading is increased.

To guard against overloading, the rated lifting capacities of the revolving stationary-mounted crane are based on



ultimate strength and yield points of its various components, together with proper factors of safety. For example, a minimum safety factor of 5 to 1 of ultimate strength is used for wire rope and 4 to 1 for structural components except for booms which have a minimum safety factor of 2½ to 1.

Using a basic boom length of 45 ft, the recommended maximum lift is 30 tons at 12 ft radius. Boom lengths can be increased to 75 ft with a recommended maximum lift of 20 tons at an 18 ft radius.

In converting the conventional ¾-yd crane-excavator for use on off-shore drilling platforms several major components were strengthened to meet safety requirements. Larger drums and drum brakes were added. An entirely new boom-hoist mechanism was installed, operated by a pair of double-disk clutches, with an automatic safety brake and a ratchet-and-pawl device directly contacting the drum.

Other features include a full-vision cab, main machinery enclosed in a one-piece gear case to insure protection against salt spray, a welded turntable with three pair of load rollers, and especially designed brakes, and other safety devices. The crane is powered by a 96 hp diesel engine at 2,000 rpm, equipped with torque converter having 2.5 to 1 torque multiplification.

Two Bucket Capacities For Backhoe Attachment

Pettibone now has an 8 ft backhoe attachment with two bucket capacities for use with its Speed Swing loader. The 18 in. bucket has a ⅜ yd capacity and the 24 in., ½ yd.

Backhoe digging depth is 8 ft 6 in. and surface reach is 12 ft 6 in. from front of tires. Loading height, from tires, is 11 ft. The Speed Swing has a 180 deg boom swing—90 deg right and left. Pettibone Mulliken Corp., 4700 W. Division St., Chicago 51, Ill.

Small Diazo Printers Are Suitable for Field Use

A new line of rotary diazo printers—which makes blue and black line prints from translucent originals and can reproduce drawings, construction manuals, charts and specifications—is on the market.

The diazo printer is designed to accommodate low-volume print requirements. With a current inverter, it can be operated from a 12-volt system vehicle battery for use in the field.

A small desk-size machine is available at a cost of $257.50. The 42 in. capacity unit costs $287.50. Blu-Ray, 303 Main St., Ivoryton, Conn.

Publications

Shoring film—Stripping and installation methods for Spanall, an all-metal horizontal shoring for beam-and-slab concrete floor forms, are described in a 15 minute color and sound film, "Span and Save." SPANALL OF THE AMERICAS, INC., 787 UNITED NATIONS PLAZA, NEW YORK 17, N. Y.

Lighting—Three booklets on lighting describe various aspects of commercial, industrial and residential lighting. One covers lighting applications of reflector lamps and provides a chart for determining lamp size and type to meet individual footcandle requirements. A second describes incandescent lamps and their performance characteristics. The third covers infrared lamps' industrial use in baking, drying and heating operations. SYLVANIA LIGHTING PRODUCTS, 60 BOSTON ST., SALEM, MASS.

Heating, ventilating, air conditioning—A 12 page bulletin describes heating, ventilating and air-conditioning products. AMERICAN AIR FILTER CO., INC., 215 CENTRAL AVE., LOUISVILLE 8, KY.

High-bay fixtures—High-bay industrial lighting fixtures for mercury and incandescent lamps are described in a four-page catalog. Performance data are given on Alzak aluminum and porcelain enamel luminares. ABOLITE LIGHTING DIVISION, THE JONES METAL PRODUCTS CO., WEST LAFAYETTE, OHIO.

Package treatment—The spargen aerobic process for the package sewage treatment plant—why and how it works; applications and a complete listing of sizes and capacities; a schematic drawing of a typical unit. 8 page bulletin 26-S-92. WALKER PROCESS EQUIPMENT, INC., 840 N. RUSSELL AVE., AURORA, ILL.

Pipe insulation—A specification sheet on pipe, tank, and vessel, styrofoam insulation — printed on 4 pages of translucent paper for reproduction — includes comprehensive copper tubing and iron pipe size and temperature specs in chart form. CUSTOMER SERVICE DIVISION, GLO-BRITE PRODUCTS, INC., 6415 N. CALIFORNIA AVE., CHICAGO 45, ILL.

Digestor supernatant—Preliminary engineering data on a new method and apparatus for high pressure aero-oxidation of digestor supernatant called the Presaire Supernatant Corrector. Leaflet 400. YEOMANS BROTHERS CO., DEPT. P, 1999 N. RUBY ST., MELROSE PARK, ILL.

Air photo interpretation—A four page folder describes how air photo interpretation provides soils and geologic data for engineering projects. AERO SERVICE CORP., 210 E. COURTLAND ST., PHILADELPHIA 20, PA.

Safety—"Safety in Road Construction Operation" lists 20 employee rulebooks and 12 special hazards bulletins published that deal with one or more potentially hazardous construction operations. ASSOCIATION OF CASUALTY & SURETY COMPANIES, 60 JOHN ST., NEW YORK 38, N. Y.

Tractor-shovel—A 4 cu yd rated tractor-shovel is illustrated and described in a six page color bulletin. Complete specifications and a list of standard equipment are included. YALE & TOWNE MFG. CO., CONTRACTORS MACHINERY DIV., BATAVIA, N. Y., OR SAN LEANDRO, CALIF.

Utility tractors—Catalog CR-1067-H covers more than 75 items of special duty equipment available for the 330 and 350 utility tractors. The catalog also points up tractor features and suggests dozens of ways of mechanizing jobs often done by hand or by smaller tractors and equipment. INTERNATIONAL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 1, ILL.

Used equipment—An eight page brochure gives particulars on bonded used equipment values under three guarantees. Illustrated with photographs and specimen copies of bond guarantees. "For Used Equipment You Can Trust" also details provisions of a guaranteed $10,000 bond. ADVERTISING DIV., CATERPILLAR TRACTOR CO., PEORIA, ILL.

Asphaltic content—Catalog BCT is a four page illustrated brochure setting forth specifications and prices of equipment for testing asphaltic content of bituminous concrete. WILL CORP., ROCHESTER 3, N. Y.

Bituminous distributor – Performance, features and specifications of the bituminous distributor are given in Catalog-100. MUNICIPAL SUPPLY CO., 2508 S. MAIN ST., SOUTH BEND 23, IND.

Excavator—A 24 page, two color catalog contains 11 on-the-job and 46 assembly photographs of the 1205 excavator. One section is devoted to the carbody and lower machinery, and includes an explanation and photographs of the turntables and hook rollers used to maintain operating stability. A weight chart and a diagram showing disassembly are among the other features included in the catalog. KOEHRING DIV., 3026 W. CONCORDIA AVE., MILWAUKEE 16, WIS.

Pipe piles—Information on spiral-weld foundation pipe piles is presented in a 24 page booklet that also includes detailed specifications and illustrated descriptions of a number of installations. Typical driving logs are shown and a special feature of the booklet is a table giving complete specifications of all popular pile hammers, including the new diesels. The table lists make, type, style, energy, blows per minute, weights and dimensons. L. B. FOSTER CO., P.O. BOX 1647, PITTSBURGH 30, PA.

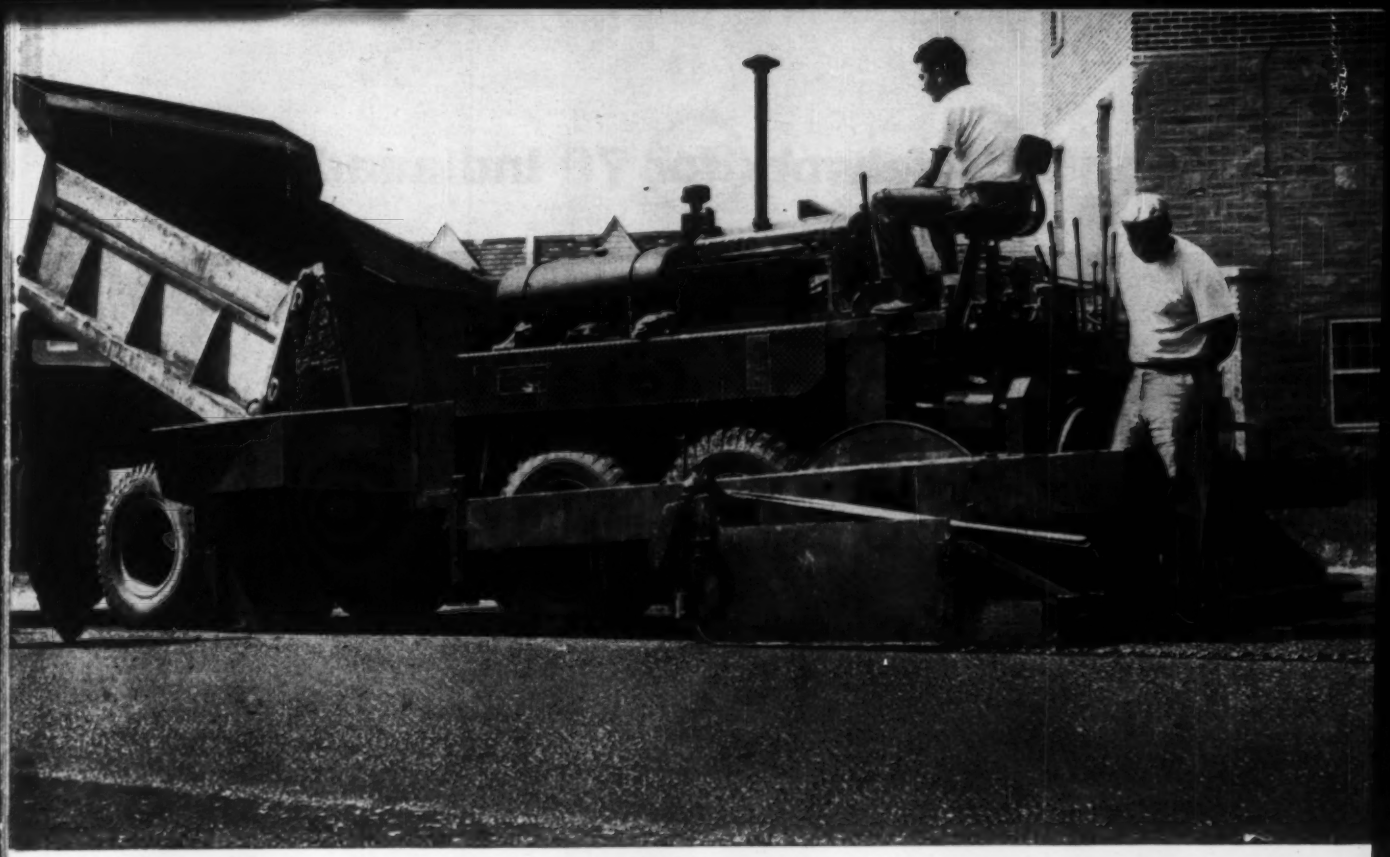
Ready-mix trucks – Factual data on truck applications for ready-mix concrete service is contained in a folder that also includes information on proper power take-off application. WHITE MOTOR CO., CLEVELAND 1, OHIO.

Film on soil cement—"One Third Mile Per Hour" is the title of a 16 mm, 15 minute sound film portraying construction of a soil cement roadway with a single pass soil stabilizer. HARNISCHFEGER CORP., 4400 W. NATIONAL AVE., MILWAUKEE 46, WIS.

Rock bits—Specifications and illustrations are included in a six page bulletin describing a line of one-use drill bits. RD29 also deals with bit construction, preparation of drill rod shanks, recommended heat treating procedures and gauging of shanks. LE-ROI DIV., WESTINGHOUSE AIR BRAKE CO., MILWAUKEE, WIS.

Bituminous distributor—A four page brochure describes the bituminous distributor available side mounted, rear mounted and in semi-tailer trailer forms with a capacity of 1,000 to 1,430 gal. CITY TANK CORP., 53-09 97TH PL., CORONA 58, N. Y.

Prefabricated lumber—A 12 page booklet describes different types and uses of prefabricated lumber and timbers. Subjects that are illustrated include truss and lamella roof construction and applications of engineered timber construction to commercial and industrial buildings, schools and churches. ROSBORO LUMBER CO., SPRINGFIELD, ORE.



Blaw-Knox PF-90 placing 1-inch base material at rate of 20 feet per minute on 5,583 foot long, 44 foot wide resurfacing of Oxford Avenue, Philadelphia.

Blaw-Knox Paver increases paving speed, says Armour Excavating, Inc.

Paver-on-wheels resurfaces four lane street at 20 feet per minute, automatically measures and levels road surface

Meeting the exacting Highway Standard Specifications on a resurfacing job was no problem at all for Armour Excavating, Inc. of Philadelphia. With their new, improved Blaw-Knox Paver, Armour was able to pave at the top speed allowable, got automatic levelling, a big reduction in screed-heating time and a superior "inspection-proof" surface.

Superintendent Walter DeGolier said that the Blaw-Knox unit provided better control characteristics. "The operator feels himself to be master of the machine. The individual control set-up makes quick adjustment possible while the machine is in motion. Most important was the way the PF-90 layed on additional binder course on depressed areas automatically to get a perfect parabolic curve on the street even with heavy traffic."

Another advantage of the PF-90 Armour found, was that rubber tires enabled the machine to travel over a newly-laid paving lane, saving overall job time. And the big eight foot spread between the PF-90's 12-inch wide tires prevented machine bounce and transmission of jolts to the roadway surfaces.

Performance like this is earning repeat orders for the Blaw-Knox Paver all over America. If you would like a technical report based on Armour's experience, call your Blaw-Knox distributor or write the factory. No obligation of course.

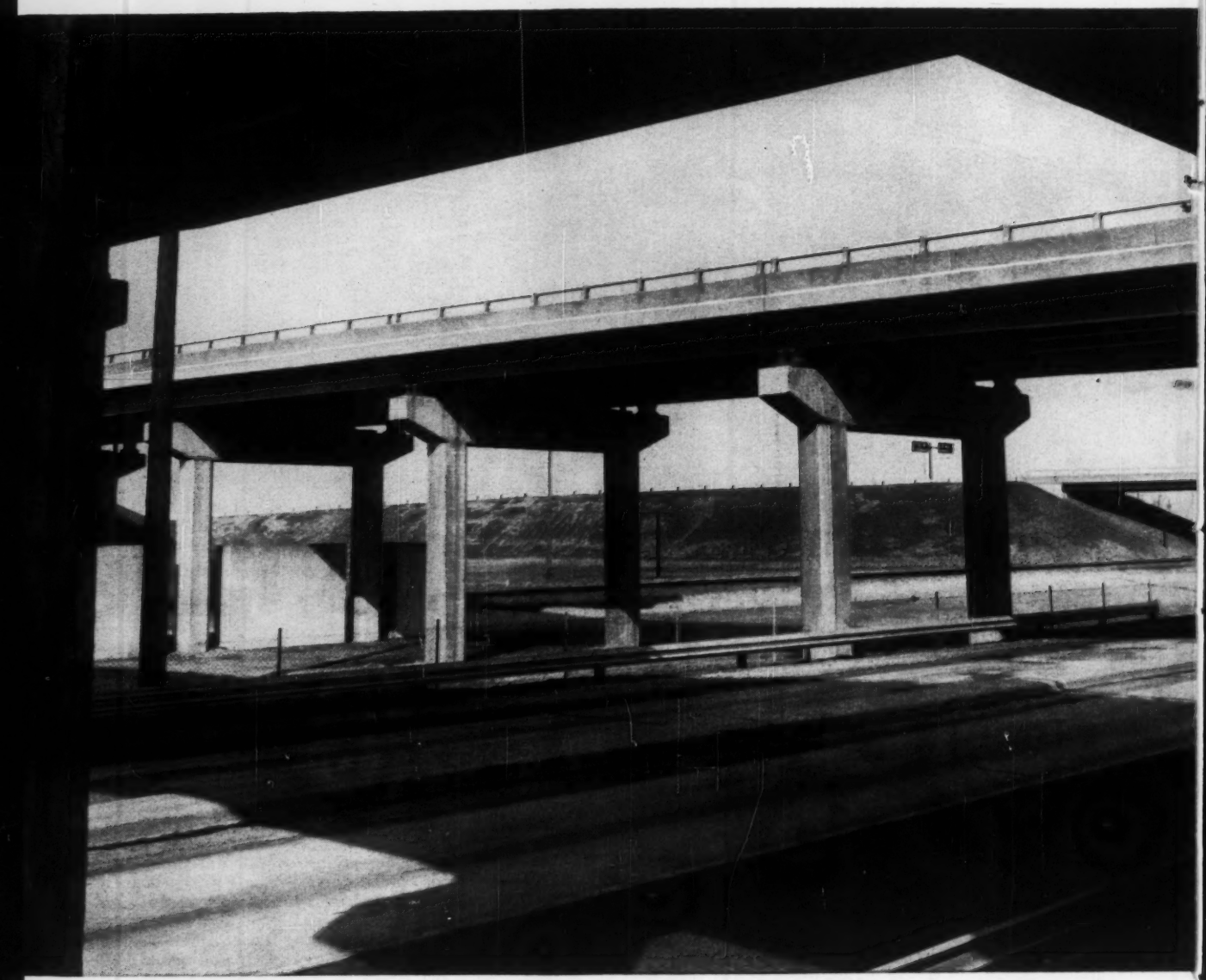
BLAW-KNOX

BLAW-KNOX COMPANY

Construction Equipment Division

41 Charleston Avenue, Mattoon, Illinois

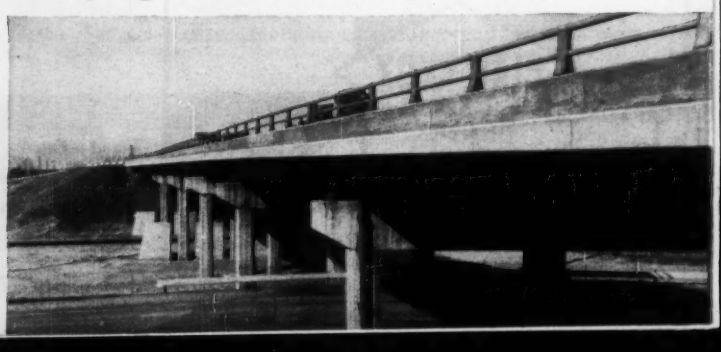
Steelwork for 70 Indiana Toll Road



THE INDIANA TOLL ROAD...

bridging a highway...

sweeping under a thoroughfare...



Bridges furnished by USS American Bridge

AMERICAN BRIDGE DIVISION fabricated 25,131 tons of steelwork for 70 bridges on this modern super road spanning the state of Indiana. 66 of these bridges, weighing 21,972 tons, were also erected by American Bridge.

There are many reasons why structural steel was selected for these bridges—and for thousands of other bridges that have recently been erected on America's many new highways.

1. **Steel goes up fast.** Because steel is strong and tough, it can take rough handling, and it fits in the field easily and accurately. And only steel offers the advantages of bolted, riveted or welded connections.
2. **Steel combines great strength and toughness.** Steel is light in ratio to its strength. It permits long, clear spans. Steel has a great capacity to absorb abnormal loads or impacts; and when pushed beyond capacity, steel will yield without breaking—adding a safety factor where safety is vital.
3. **Steel structures are easy to alter.** Structures made of steel can be readily expanded or altered during or after construction with a minimum of time, trouble and expense.
4. **Steel is easy to transport, handle and store.** Because steel is light in ratio to its strength, it is easy to handle, costs less to ship and requires less storage space.
5. **Steel can be accurately inspected.** A steel structure is always easy to check visually. In steel construction, the possibility of human error has been all but eliminated.

If you are a bridge designer, take advantage of all the basic benefits of structural steel. If you are a bridge contractor, let American Bridge—the world's largest builder of bridges—put its engineering "know-how" and skilled man power to work for you.

We are prepared to serve you. Just contact the nearest American Bridge office.

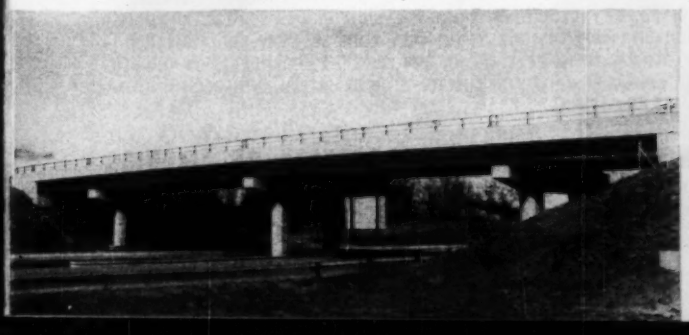
USS is a registered trademark

BRIDGE DESIGNERS: Alfred Benesch & Assoc. · DeLeuw, Cather & Company · Harry Balke Engineers · Moran-Proctor-Mueser & Rutledge · Richardson, Morehouse, Ramsey & Fisher · Vogt, Ivers, Seaman and Assocs.

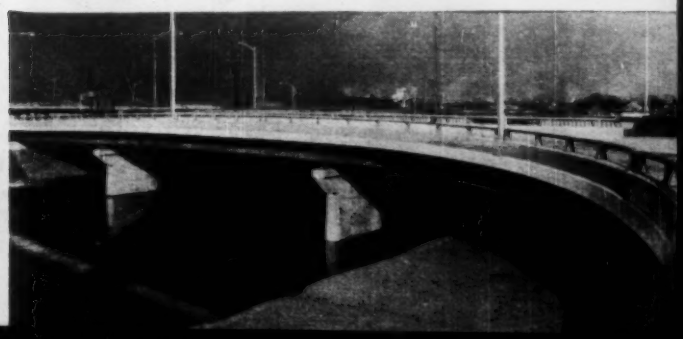
American Bridge
Division of USS United States Steel

General Offices: 525 William Penn Place, Pittsburgh, Pa.
Contracting Offices in: Ambridge · Atlanta · Baltimore · Birmingham · Boston · Chicago · Cincinnati · Cleveland · Dallas · Denver · Detroit · Elmira · Gary · Houston · Los Angeles · Memphis · Minneapolis · New York · Orange, Texas · Philadelphia · Pittsburgh · Portland, Ore. · Roanoke · St. Louis · San Francisco · Trenton · United States Steel Export Company, New York

approaching Gary, Indiana...



crossing the Calumet River.



Powerful Small Diameter Vibrators for Prestressed Concrete

MODEL 11A

MODEL 26

The small diameter Model 11A concrete vibrator solves the problem of low slump consolidation in constricted areas common to prestressed manufacture.

Model 11A, weighing only 17 pounds, is amazingly effective for a unit of such small diameter. It is ideal for slip-form work and indispensable for use in constricted areas where standard vibrators are impractical. Operates on AC or DC from any light socket outlet.

Model 26 is an effective, full powered, small diameter vibrator available with extended lengths of flexible drive. Gets into hard-to-reach places and does a thorough job of compaction. With 4 feet of drive it weighs only 37 pounds. Head is interchangeable with the Model 11A.

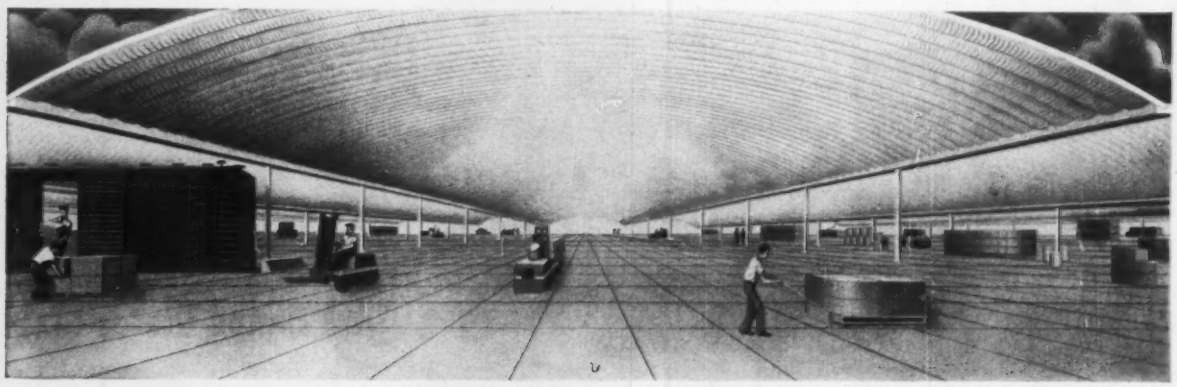
Both vibrators equipped with the exclusive Viber replaceable rubber tip. Steel tip available if specified.

Contact your dealer or write direct for detailed information.
Viber Company, 726 South Flower Street, Burbank 14, California

VIBER CO

VIBRATORS

Pioneers and leaders in the manufacture of vibrators.



all the space you require in this 150 foot clear span building

PATENTED "TRUSS-SKIN" ROOF SYSTEM

"ENGINEERED TO THE MARKETS" TRADEMARK

TRUSSLESS Wonder Building

CONSIDER SPECIFYING THIS 150 FEET WIDE CLEAR-SPAN BUILDING OF TOMORROW RIGHT NOW AT A DOWN-TO-EARTH COST—AND ERECT IT IN A MATTER OF DAYS. THE PATENTED WONDER BUILDING® TRUSS-SKIN ROOF SYSTEM OFFERS A LOW COST, EFFICIENT METHOD TO ENCLOSE VAST AREAS WITHOUT PILLARS, POSTS, BRACES OR TRUSSES OF ANY KIND. THE CLEAN LINES PROVIDE EYE APPEAL AS WELL AS MORE THAN ADEQUATE STRENGTH. SUITED FOR FACTORIES, WAREHOUSES, AUDITORIUMS, SCHOOLS AND OTHER BUILDING APPLICATIONS. TRUSS SKIN ROOF SYSTEMS ARE AVAILABLE IN WIDTHS 20 TO 150 FEET AND IN ANY LENGTHS REGARDLESS OF YOUR REQUIREMENTS. WRITE FOR COMPLETE INFORMATION AND SPECIFICATIONS.

WONDER BUILDING CORPORATION OF AMERICA
Dept. **L-558**, 30 N. LaSalle Street, Chicago 2, Illinois

Rush me illustrated data on the WONDER BUILDING Truss-Skin Roof System

Name _____

Address _____

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WONDER BUILDING CORPORATION OF AMERICA
30 N. LaSalle St. • Chicago 2, Illinois

Men and Jobs

Municipal Utilities Agency Reorganizes Engineering

The East Bay Municipal Utility District, Oakland, Calif., has reorganized its engineering department, setting up divisions on a functional rather than geographical basis.

Francis Blanchard heads the water resources and planning division, William Trahern the design engineering division, E. L. Macdonald the field engineering division and Joseph DeCosta the water production and distribution division. All four report to R. C. Kennedy, chief engineer.

The MUD supplies water to 13 cities on the east side of San Francisco Bay.

Dominy to Become USBR's Associate Commissioner

Floyd E. Dominy, assistant commissioner of the Bureau of Reclamation, is to be advanced to associate commissioner. He joined the Bureau in 1946 as chief of Allocation and Repayment Branch of the Operation and Maintenance Division, became assistant director of the division in 1950 and director in 1953.

Mr. Dominy became chief of the Division of Irrigation in 1957, when he was named assistant commissioner. He received his B.A. degree in agriculture from the University of Wyoming in 1932 and has done post-graduate work at the University of Wyoming and Columbia University. His new position will be second in authority to Commissioner W. H. Dexheimer.

Marc B. Rojtman Is Elected President of J. I. Case Co.

Marc B. Rojtman, formerly executive vice president of J. I. Case Co., Racine, Wis., was elected president of the company at the annual meeting of the board of directors, April 18. John T. Brown, formerly president and chairman, was re-elected chairman of the board.

Mr. Rojtman, formerly president of American Tractor Corp., of Churubusco, Ind., joined Case as executive vice president and general manager when the companies merged in January of last year.

Corps of Engineers Names Two Division Engineers

The Corps of Engineers has named Brig. Gen. William W. Lapsley as the new Ohio River Division Engineer. He

NO BUSTED KNUCKLES

GOLDEN KNURL HOLDS EXACT JAW OPENINGS AUTOMATICALLY!

NO BUTTONS ... NO LEVERS ... NO GADGETS

Meets Federal Specifications: GGG-W-631A, Type 1

Save your hands with Proto's Clik-Stops...adjustable wrenches with jaws that won't work loose or change adjustment...even when dropped or knocked against work. The Clik-Stop saves hands...and readjusting time ...lets you put in more labor.

Available in FIVE popular sizes*

704L	706L	708L	710L	712L
4",	6",	8",	10"	12"

*Soon Available:

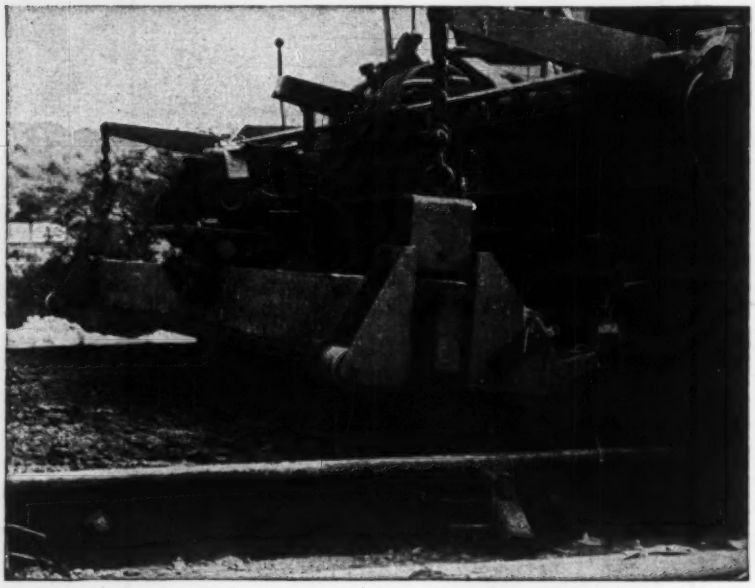
716L	720L
16"	20"

PROTO TOOLS
PROTO HIGH PROFESSIONAL TOOLS
Division of TOOL INDUSTRIES

2209 Santa Fe Avenue
Los Angeles 54, California

YOU'LL PREFER PROTO PROFESSIONAL TOOLS

ENTERPRISING CONTRACTOR ATTACHES SCREED TO ROAD SPREADER



CARMEL, N. Y. Camarco Contractors Inc. needed a vibrating attachment for their concrete road spreader since the State specifications called for vibration. Although a standard vibration attachment could be obtained for this spreader, Mr. Camarco decided he could get the same effect by attaching a 12-foot Stow screed to the spreader.

This was easily accomplished. The screed was furnished with eye bolts on the top of the end roller assemblies. A hydraulic lift arrangement lifted the screed by chains attached to the eye bolts. When lowered into place on the forms, the Stow screed was pulled ahead by chains attached from the front of the rollers to the spreader.

After striking off the concrete, the road finishing machine put the final finish on the slab.

Like Mr. Camarco, many other contractors are recognizing the value of vibrating screeds for use on bridge decks, small sections of concrete highways, floors and prestressed panels. Experience has proved that Stow screeds cut production time almost in half. They strike off even *stiff* concrete faster, smoother and true to grade and vibrate it at the same time.

Stow screeds can be cut to any desired length. Also available now, the Stow package assembly, everything but the beam, consisting of a 2½ HP vibrating unit, brackets for engine mounting, end rollers, handles and all necessary bolts.

Stow offers quick delivery; shipment can be made within three days from receipt of order.

STOW MANUFACTURING CO.

19 SHEAR STREET, BINGHAMTON, N. Y.

will replace Col. Rudolph E. Smyser, Jr., who retires August 1.

General Lapsley, 48, was graduated from the Military Academy at West Point in 1935 and at present is commander of the Engineer Maintenance Center at Columbus, Ohio.

In another change the Corps has named Brig. Gen. Robert G. MacDonnell as the new South Pacific Division Engineer. He will succeed Brig. Gen. William F. Cassidy, who has held the post since 1955.

General MacDonnell, a 1934 graduate of the Military Academy, has been assistant commander of the Engineer School, Ft. Belvoir, Va.

Careers

Public Works

I. M. Bailey, Jr., has been named city engineer and public works superintendent at Hamlet, N. C. He formerly was with J. A. Jones Construction Co. of Charlotte, N. C.

Harry W. McOuat, one of the Pacific Coast's leading authorities on harbor construction, is retiring after 37 years with the Corps of Engineers in the Los Angeles District. He played a key role in the building of the Los Angeles-Long Beach and San Diego Harbors, as well as other harbor construction from San Luis Obispo to San Diego.

Walter S. Todd, with the Kentucky State Highway Department for nearly 30 years, retired April 30. He began as a designer and rose to head the bridge construction division, where he has been in charge of bridge construction for the last 12 years.

Honors

Ben Morcell, Admiral, USN (ret.) and Chairman of the Board, of Jones & Laughlin Steel Corp., was given the Washington Award for 1958, by the Western Society of Engineers, Chicago, on May 9. The award, given annually to an outstanding engineer upon the recommendation of a commission representing WSE and four other engineering societies, was given to Morcell, "for distinguished service as a skilled engineer, outstanding naval officer, industrialist, Christian layman and Hoover Commission associate."

Morris Goodkind, of Goodkind & O'Dea, consulting engineers, Bloomfield, N. J., has been made the 1958 recipient of the Egleston Medal, Columbia University's highest award for "distinguished engineering achievement". Mr. Goodkind is a former director and chief bridge engineer of the New Jersey Highway Department.

Obituaries

Gabrien S. Brown, 87, former president of Alpha Portland Cement Co., Easton, Pa., died April 13. He served three terms as president of the Portland Cement Association.

Fred R. McCormick, 45, chief engineer of power plant construction for Idaho Power Co., died March 24 in Boise. He was in charge of construction of Idaho Power's three-dam development at Hells Canyon on the Snake River, and was assigned the post of chief engineer of power plant construction 14 months ago.

Horatio S. Mattimore, 76, former chief engineer for the Florida State Road Department, died March 3 at Hollywood, Fla. He received the George Bartlett Award—administered by the American Association of State Highway Officials, the American Road Builders Association and the Highway Research Board—in 1943 as the outstanding highway engineer of that year. Until his retirement in 1943, Mr. Mattimore had been chief engineer of tests for the state's highway department.

Robert E. Sheal, 87, for years vice president of the Frazier-Ellms-Sheal Co., consultants in water purification and sewage disposal, died April 8 in Washington, D. C. A 1894 graduate of Rensselaer Polytechnic Institute, he was a life member of the American Society of Civil Engineers and the Cleveland Engineering Society.

W. Clarence Ridgway, 83, a past president of the Indiana Water Works Association and former superintendent of the Lebanon, Ind., waterworks system, died April 5 in Lebanon.

Clarence W. Hanson, 56, a partner in the firm of Modjeski & Masters, Harrisburg, Pa., died March 26. He joined the firm in 1923 as an assistant engineer on construction and reconstruction of bridges over the Missouri, Susquehanna and Hudson Rivers. In his years with the firm he specialized in administration of engineering for heavy construction projects, investigations, inspections, reports, traffic surveys, and supervision of field projects. He was a 1923 civil engineering graduate of Iowa State College.

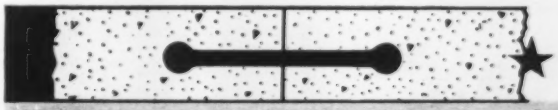
Charles E. Duncan, 49, vice president and chief engineer for Huber, Hunt & Nichols, Indianapolis, died April 14. A graduate of the University of Illinois, he formerly was with Shank Construction Co.

SERVICISED

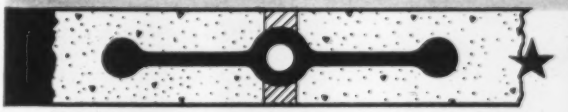
DUMBBELL DESIGN

WATERSTOP

for Watertight Concrete Joints



rubber or polyvinyl plastic

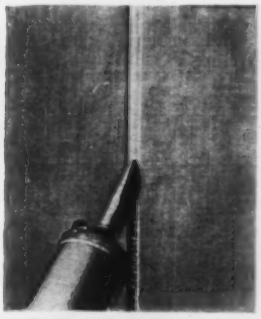


Servicised Dumbbell design has been used for more than 25 years in heavy concrete structures and where hydrostatic water pressure is present because it provides better retention of the waterstop in the joint during horizontal or vertical movement. When concrete contracts and the joint opens up, outer dumbbell edges become more tightly engaged with the concrete, making it a tighter seal as the tension increases due to movement either in the joint or increasing water pressure on one side of the joint. Dumbbell design waterstop is made from rubber or polyvinyl plastic in both flat or centerbulb types. Write for special Catalog.

VERTISEAL

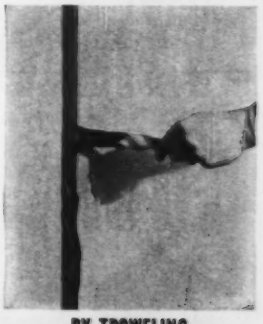
cold applied vertical joint sealer

- ★ Self-vulcanizing
- ★ No cold flow after cure
- ★ Maintains bond from below 0° to 150° F.
- ★ Black . . . White . . . Gray colors



APPLIED WITH CAULKING GUN

Vertiseal is an extremely efficient joint sealing compound . . . resistant to petroleum derivatives, most common acids, fats and alkalis. Stable composition, superior cohesive and adhesive qualities, and simple installation with caulking gun or by troweling, make Vertiseal first choice for sealing virtually any type of vertical or horizontal joints.



BY TROWELING

Write for special Vertiseal Catalog and Specifications.

SERVICISED PRODUCTS CORPORATION

6051 WEST 65th STREET · CHICAGO 38, ILLINOIS

Concrete Paving, Pennsylvania

Contractor must prove he has sufficient equipment to complete 5.39 mile job in contract time

This 48 ft, reinforced cement concrete pavement, with two separators, in East and West Providence Townships, Bedford County, Pa., will cost an average of $352,525 a mile. The $1,900,258 award by the State Highway & Bridge Authority, Pennsylvania Dept. of Highways, Harrisburg to Central Pennsylvania Stripping & Construction Co., Hazleton, Pa., is almost 30% below the engineers' estimate.

The contractor must satisfy the State Highway Dept. that he will use sufficient equipment to complete the work within the contract time. The following represents the minimum types and numbers of equipment believed necessary to comply with these terms:

Equipment	Capacity or Weight	Number Required
Power shovels	2½ cy	6
Power roller	10 ton	7
	8-10 ton tandem	1
Construction or transit mixers	14S	4
Paving or transit mixers	34-E dual drum	1
Mechanical bituminous spreader & paver		1
Stone spreaders, compressors, jackhammers & pumps		sufficient

Minimum wages on the job include: carpenters, $2.67; bulldozer operators, $3.01; power shovel operators, $3.30; common laborers, $1.87.

1C	Central Pennsylvania Quarry Stripping & Constr. Co., Hazleton, Pa	$1,900,258
2	Latrobe Road Constr., Inc., Latrobe, Pa	2,015,265
5	A. E. O'Block, Unity, Pa	2,419,794
EE	Pennsylvania Dept. of Highways, Harrisburg	2,700,000

Bids: 3-14-58 Items	Unit	Quantity	Unit Prices 1C	2
Clear & grub	ls	job	$25,000	$40,000
Exc, cl 1	cy	686,231	0.75	0.82
cl 2	cy	12,878	2.50	3.50
cl 3	cy	1,060	6.00	5.00
Subgrade	sy	5,694	0.25	0.30
special	sy	204,410	0.55	0.60
Shoulders	lf	1,313	0.40	0.50
Base crse, aggr, tp A, 6"	sy	94	1.50	1.80
8"	sy	3,789	1.65	2.10
12"	sy	1,811	1.85	2.80
Stabilized shoulders	lf	28,125	1.40	2.00
Aggregate, course, 2B	cy	146	5.00	7.00
Surf matl, select	cy	384	6.00	7.00
stone	cy	74	6.00	7.00
Reinf cmt conc pavement, 9"	sy	145,476	5.75	5.70
Bit surface course, ID-2	t	5	12.00	15.00
2½"	sy	5,158	1.70	1.50
1½"	sy	94	1.60	1.25
Concrete, cl A	cy	107	60.00	65.00
cl B	cy	898	50.00	45.00
Reinforcement bars	lb	49,980	0.14	0.13
Metal railings	lf	25	12.00	15.00
Stone bkfl, struct	cy	6	8.00	10.00
misc drainage	cy	3	6.00	10.00
Bri superstruct, sta 711+ r	ls	job	500.00	1,000
Cmt conc, cl B, paving for stream beds, 6"	cy	24	45.00	50.00
Inlets, type H	ea	34	265.00	300.00
modifed	ea	9	270.00	375.00
type 4	ea	2	320.00	400.00
CMP, 18"	lf	838	3.90	5.10
asph ctd, 18"	lf	247	5.00	5.85
42"	lf	16	13.50	23.50
10 ga, elong	lf	144	16.25	25.75
Reinf cmt conc pipe, 18"	lf	3,810	5.10	4.90
24"	lf	1,012	7.00	7.30
36"	lf	116	12.75	13.66
60"	lf	116	29.00	36.10
RCCP or ext str VCP, open jt, or perf asph ctd CMP, 18"	lf	1,410	4.50	5.10
flat base, 4'x6'	lf	362	62.00	81.50
Underdrain, pipe fndn, tp A, 6" and tp 1 bkfl	lf	15,813	1.50	1.80
pipe outlets, 6"	lf	730	1.00	1.80
Subgrade drain	lf	500	1.00	1.00
Guard fence, tp 1-B	lf	24,498	1.80	1.40
post	ea	8	12.00	10.00
End anchorages, tp 1	ea	68	75.00	65.00
Conc traffic separator, white	ea	27,277	3.00	3.50
Guard fence reset	lf	256	1.25	1.40
Seed & soil supp, slope mix	sy	144,088	0.05	0.045
berm mix	sy	2,618	0.05	0.045
Mulch, hay	sy	148,706	0.05	0.045

Complete: 230 wk days. Liq dam: $200/day r remove

Wisconsin Grading

John F. Bloomer Co., Appleton, Wis., on a bid of 66¢ a cu yd for 782,795 yd of excavation borrow, took this 2.246 mile grading contract in Winnebago County, Wisconsin. The State Highway Commisison award of $729,077 is for grading on the relocation of U.S. Highway 41, with dual highways having two diamond type interchanges.

The contractor must haul 65,180 cu yd of select borrow a long distance.

Concrete specifications are: Class AA, air entrained, total aggregate 530 lb, fine aggregate 35-45%, maximum water 6 gal.

Minimum wages on the job range from $2.15-$3.17 for skilled labor, through $1.80-$3.00 for semi-skilled, to $1.95-2.05 for common laborers.

1C	J. F. Bloomer Co., Inc., Appleton, Wis	$729,077
2	Bacco Constr. Co., Iron Mt., Mich	746,929
6	S. J. Groves & Sons Co., Minneapolis, Minn	813,600

Bids: 12-17-57 Items	Unit	Quantity	Unit Prices 1C	2
Clear	sta	12	$55.00	$50.00
Grub	id	550	1.00	1.00
	sta	12	55.00	50.00
	id	450	1.00	1.00
Remove pavement	sy	1,950	0.60	0.70
conc sidewalk	sy	130	1.00	0.50
Abandon catch basins	ea	3	50.00	40.00
Excavation, unclass	cy	91,252	0.36	0.30
Borrow, select	cy	65,180	1.08	1.03
excavation	cy	782,795	0.66	0.70
Granular backfill	cy	5,345	1.80	1.80
Roadway, finish	ls	job	8,000	4,000
old, obliterate	sta	3	25.00	30.00
Gran subbase course	sy	6,450	0.70	0.75
or cr stone base crse	cy	2,300	1.80	1.70
Masonry, mortar rubble	cy	75	28.00	30.00
dry rubble	cy	10	20.00	15.00
Culvert pipe, 18"	lf	598	3.50	3.50
24"	lf	492	5.50	5.50
30"	lf	190	8.00	8.50
36"	lf	382	11.00	11.00
48"	lf	302	12.00	12.00
72"	lf	148	39.00	30.00
CMP arch, 25"x16"	lf	38	5.00	5.50
38"x22"	lf	116	7.00	8.00
Slope pav grouted rubble	sy	150	5.50	6.50
concrete	sy	3,066	5.00	5.00
Mort rubble ditch chks	cy	120	28.00	30.00
CSP, storm sewer, non-reinf, 8"	lf	40	4.00	4.50
RCCP, storm sewer, 12"	lf	822	5.00	7.00
Inlets, type 1-A	ea	7	150.00	250.00
median	ea	3	350.00	350.00
type 1 w/spec cover	ea	6	170.00	300.00
Marker posts	ea	52	5.00	5.00
for R/W	ea	115	5.00	5.00
Surface treatment, CaCl	t	6	60.00	50.00
Salvaged topsoil	sy	164,400	0.12	0.10
Fertilizer	cwt	237	5.00	6.00
Seeding	sy	264,000	0.015	0.015
Sodding	sy	4,800	0.65	0.60

Completion 200 cal days. Liq dam: $109.38/day

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The New Age of Concrete

brings greater architectural beauty and new structural form to buildings

An unusual example of the adaptability of concrete is shown in the foreground structure of the Court House Square Project developed by Webb & Knapp in Denver. Technically known as a hyperbolic paraboloid, this cast-in-place concrete shell, resting on four corners only, is self-supporting, requiring no columns or interior supports of any kind.

The beauty, economy, clean lines, grace, and enduring qualities of architectural concrete buildings make them an easy choice for almost any type of use. New finishing techniques and new concepts of structural design make possible unlimited selection of building shapes and appearance.

Ideal Cement is produced in 15 plants extending from the West Coast through the Rocky Mountain region, the Southwest, and the Deep South, which assure an ample supply of Portland cement for any architectural use.

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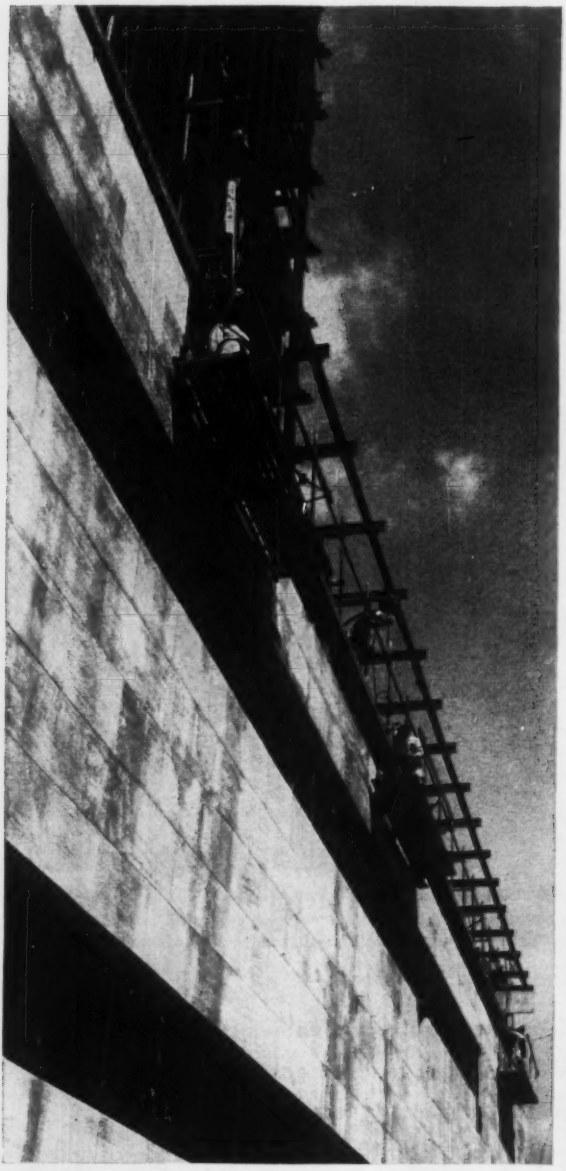
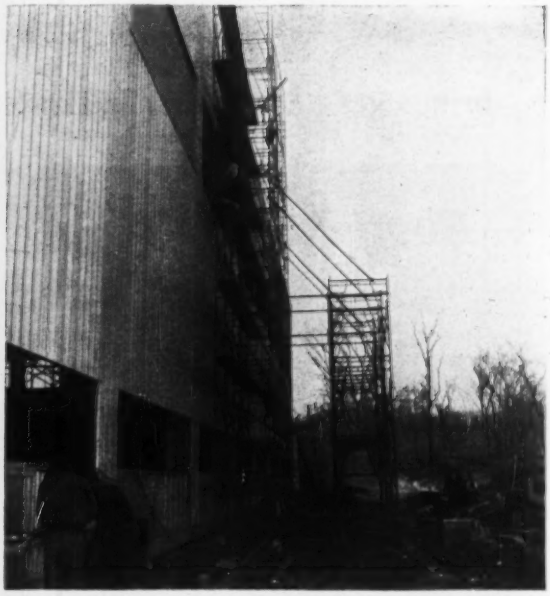
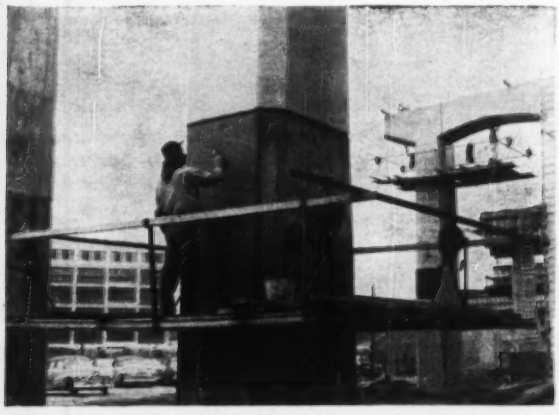
Scaffolding Methods . . . by Patent Scaffolding Co.



SCAFFOLDS AND PANELS RIDE MONORAIL—A monorail, steel scaffolding and working platforms combine to speed construction of the new National Bank of Commerce, San Antonio, Texas. "Gold Medal"® Suspended Scaffolding I-beams make the monorail. "Gold Medal" Junior Swinging Scaffolds are suspended from it by steel cables attached to two trolleys which ride the I-Beam flanges. An electric winch, riding the monorail between the two scaffolds, hoists and moves pre-cast panels to position. "Tubelox"® Scaffolding provides roof substructure for outrigger I-beam, normally used to support "Gold Medal" Suspended scaffolding Machines. The monorail is attached to it by clamps. Cables tie the substructure to the roof. Henry C. Beck, general contractor.



ROLLING SCAFFOLD SPEEDS SIDING WORK—Hunt Construction Co. uses this rolling scaffold for fast metal siding work on a hanger, for U.S. Steel Co. at the Greater Pittsburgh Airport. Scaffold, 28′ x 47′-high, is quickly made of "Trouble Saver"® Scaffolding. Casters set into the legs for rolling on planking. Note stabilizing unit at right.



HANGING SAFELY TO BRIDGE PIER FINISHING—Concrete bridge piers for the Killingsley Turnpike, Bridgeport Harbor Bridge, Conn., require finishing after pouring for better appearance. To get up and around these piers quickly and safely, A. S. Wikstrom, Inc., contractor, uses "Gold Medal" Junior Swinging Scaffolds. These are suspended by $^{5}/_{16}$″ steel wire rope from the pier beams and are overlapped at the corners to fit around columns. Other scaffolds are hung from beam mid-sections for work in that area. Easy adjustment by ratchet-action raising and lowering mechanisms provides fast, safe movement on sturdy, strong, level working platforms as the work progresses. This contractor purchased four and rented 18 others for the job.

Complete scaffolding equipment and engineering service offered through nation-wide sales offices or representatives. Look under Patent Scaffolding in the Yellow Pages for your nearest source.

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Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Clay Products, Lime, Plaster, Paint, Roofing: Last May 1; Next, May 29.
- Wage Rates, Building Board, Lath, Insulation: Last, May 1; Next, May 29.
- Cement Aggregates, Ready-mixed Concrete Asphalt: Last, May 8; Next, June 5.
- Iron & Steel Products, Pine: Last May 15; Next, June 12.

LUMBER, TIMBER, PLYWOOD—PER M FT., B.M., CARLOAD LOTS F.O.B.

SOUTHERN PINE AND DOUGLAS FIR

All Southern Pine is No. 2 common or better and for No. 1 N. C. Box. (Prices in Bold Face)
All Fir boards, dimensions, planks No. 2, Fir small timbers and timbers are No. 1. Lengths up to 20 ft. (Prices in italics)

	1x6 s4s	1x8 s4s	2x4 s4s	2x6 s4s	2x8 s4s	2x10 s4s	3x12 Rgh	6x12 Rgh	12x12 Rgh	LONG LEAF Y. P. Merchantable grade up to 20 ft. 2x12 Rgh	12x12 Rgh	PLYWOOD Rail freight increment (See note for base price) ¼"	¾"
Atlanta †	$73.00	$76.00	$76.00	$79.00	$81.00	$86.00	$138.00	.....	.....	$121.00	$156.00	$22.32	$27.24
Baltimore *	95.00	100.00	100.00	100.00	100.00	105.00	114.00	.....	.....	170.00	185.00	25.92	31.80
	100.00g	*105.00g*	*105.00g*	*105.00g*	*105.00g*	*105.00g*	*135.00g*	*$150.00*	*$144.00*	.....	.....	.....	.....
Birmingham †	80.00	82.00	75.00	82.00	85.00	90.00	105.00	.....	.....	118.00	160.00	21.78	26.58
	70.50	*70.50*	*67.00*	*70.00*	*70.00*	*85.00*	*75.50*	*70.50*	*70.50*	.....	.....	.....	.....
Boston ‡	92.00f	94.00f	100.00f	100.00f	100.00f	106.00a	.....	.....	.....	.....	.....	25.92	31.80
	94.00k	*94.00k*	*111.00*	*111.00*	*111.00*	*110.00*	*118.00*	*118.00*	*133.00*	.....	.....	.....	.....
Chicago **	95.00	96.00	92.00	106.00	114.00	115.00	110.00	.....	.....	138.00	138.00	22.45	27.37
	103.00	*103.00*	*116.00*	*114.00*	*114.00*	*115.00*	*133.00*	*133.00*	*133.00*	.....	.....	.....	.....
Cincinnati *	93.00	94.25	86.50	90.50	95.00	102.75	116.00	.....	.....	129.50	127.50	25.00	30.48
	98.00	*98.25*	*97.50*	*99.50*	*100.25*	*111.25*	*133.50*	*133.50*	*133.50*	.....	.....	.....	.....
Cleveland **	90.00	93.00	90.00	97.00	97.00	101.00	.....	.....	.....	.....	.....	25.37	30.93
			100.00	*96.50*	*99.00*	*103.00*	*115.00*	*115.00*	*115.00*	.....	.....	.....	.....
Dallas ‡‡	74.50	74.50	70.00	70.00	70.00	75.50	120.00	.....	.....	130.00	125.00	18.72	22.80
Denver *	*Not in stock*		*127.50R*	*122.50*	*122.50*	*127.00*	*136.00*	*148.50*	*133.50*	.....	.....	13.92	16.98
Detroit ‡	116.50	119.00	115.75	117.00	122.00	122.00	.....	.....	.....	130.00	.....	25.00	30.48
	125.00	*125.00*	*127.75*	*122.50*	*130.00*	*135.00*	*138.00*	*196.00*	*196.00*	.....	.....	.....	.....
Kansas City ‡	120.00	120.00	120.00	120.00	125.00	135.00	.....	.....	.....	.....	.....	16.56	20.16
	180.00	*180.00*	*180.00*	*180.00*	*185.00*	*185.00*	*180.00*	*235.00*	*235.00*	.....	.....	.....	.....
Los Angeles ‡	*90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*90.00*	*115.00*	*180.00*	*180.00*	.....	.....	18.61ab	20.34ab
Minneapolis #	*135.00m*	*135.00x*	*140.00*	*140.00*	*140.00*	*140.00*	*185.00*	*185.00*	*185.00*	.....	.....	19.80	24.25
Montreal ab	87.00	94.00	87.00	88.00	104.00	125.00	.....	.....	.....	122.00	122.00	.....	.....
	165.00	*165.00*	*165.00*	*165.00*	*165.00*	*165.00*	*170.00*	*170.00*	*170.00*	.....	.....	.....	.....
New Orleans †	87.00	87.00	89.50	91.00	90.00	97.00	121.50	.....	.....	181.00	181.00	18.72	22.80
†	*105.00*	*105.00*	*94.50*	*115.00*	*115.00*	*115.00*	*127.50*	*127.50*	*147.50*	.....	.....	.....	.....
New York ‡	107.00	108.00	113.00	115.00	115.00	120.00	.....	.....	.....	240.00	280.00	25.92	31.80
	.....	.....	*118.00*	*119.00*	*119.00*	*130.00*	*161.00*	*164.00*	*164.00*	.....	.....	.....	.....
Philadelphia ‡		Range { om 100/120				105/125	105/125	.....	.....	214/224	214/224	28.00	32.00
		Range { om 110/140				*115/145*	*135/160*	*158.00*	*158.00*	.....	.....	.....	.....
Pittsburgh 2	120.00	120.00	125.00	120.00	125.00	130.00	145.00	.....	.....	140.00	168.00	25.92	31.80
	150.00	*150.00*	*140.00*	*140.00*	*140.00*	*140.00*	*165.00*	*168.00*	*168.00*	.....	.....	.....	.....
St. Louis #	116.00	118.00	126.00d	126.00d	126.00e	131.00e	.....	.....	.....	.....	.....	18.72	22.80
	.....	.....	*134.00*	*134.00e*	*134.00e*	*138.00e*	*192.00e*	*192.00*	*192.00*	.....	.....	.....	.....
San Francisco ‡	*74.00*	*74.00*	*81.00*	*81.00*	*81.00*	*81.00*	*96.00*	*109.00*	*109.00*	.....	.....	13.23	14.91a
Seattle †	*59.00*	*67.00*	*69.00*	*69.00*	*69.00*	*69.00*	*75.00*	*88.00*	*88.00*	.....	.....	.....	.....
Toronto a	92.50	93.50	90.75	90.00	90.00	90.00	.....	.....	.....	92.00	.....	.....	.....
	118.00	*118.00*	*117.75*	*120.00*	*122.00*	*126.00*	*142.00*	*155.00*	*145.00*	.....	.....	.....	.....

† F.o.b. mill. * F.o.b. city, CL, out of yard. ** F.o.b. city, CL, direct mill shipment. ‡ Deliv. to contr. CL. 1. Retail, LCL, at yard. # Retail, LCL, deliv. 2. Deliv. truck lots. 3. sad., truckload lots, 8/8 Mtbm

LUMBER: Bold Face Type, Southern Pine. Italics, Douglas Fir. *a Spruce. *b Tax exempt. *c 8M lots. *d 8, 10, & 12 ft. lengths. *e 8 to 16 ft. lengths. *f Hemlock *g No. 1 common. *j 8 ft. lengths. *k No. 3 common. *l Incl rail rate from North west mills to San Francisco are $11.50 to $15.00 per M ft. bm. From Northern Calif. mills $9.00 by rail, $9.50 by truck. All rates for surfaced stock. For rough, add $3.00 to above figures. *m Up to 16" *R revised

PLYWOOD (Plyform, oiled and edge sealed): Douglas fir, 4' x 8' panels, 5-ply sanded 2 sides, carload lots, delivered per 1000 sq. ft. surface. Seattle base price, Interior, moisture resistant, ¼", $146.00; ¾", $186.00. Exterior, waterproof, ¼" $150.00; ¾", $170.00. For other centers add rail freight increment from table on proper size. *a Lower rate by water shipment. *b 50,000 lbs. minimum.

GLASS, EXPLOSIVES, CHEMICALS

	WINDOW GLASS Discounts from jobbers list, Feb. 1, 1950a Single or Double Strength A quality	B quality	EXPLOSIVES Per lb. 40% Ammonia Gelatin in 50 lb. cases delivered in 200 lb. lots*
Atlanta	78%c	78%c	$0.2615
Baltimore	74%d	76%d	.2615
Birmingham	82%	83%	.2465
Boston	72–10%	72–10%	.2615
Chicago	72%	72%	.2615
Cincinnati	74%	74%	.2615
Cleveland	74–2–10%	74–2–10%	.3015
Dallas	76%	76%	.2690
Denver	74%	74%	.2665
Detroit	74–10–10%	74–10–10%	.2615
Kansas City	74–10–10%	74–10–10%	.2665
Los Angeles	70%	76%e	.2640
Minneapolis	71–10%	71–10%	.2665
Montreal	40–10–5%bc	40–10–5%b	22.05h
New Orleans	75%	76%	.2665
New York	79–10%	79–10%	.45g
Philadelphia	74–10%	75–10%	.2615
Pittsburgh	72%	72%	.2615
St. Louis	72–10–10%	72–10–10%	.2665
San Francisco	60%–25%	68%–25%	.2615
Seattle	67%	72%	.2640

Price of 60% Ammonia Gelatin is $0.18 per lb. higher than 40% in U. S., $1.76 per 100 lbs. higher in Canada.

Glass: *a Jobbers' list price per box, 14 x 20, ss, $42.75 for A quality, $37.50 for B quality; 14 x 20, ds, $60.00 for A quality, $52.75 for B quality. *b sales tax extra. *c 77% or single strength. *d Discount 8/15/52. *e 77% for double strength.

Explosives: * Cartridges of 1¼", 1½", 1¾", 2", 2¼", 2½", 3" diameters. Urban prices influenced by service charges or local storage and delivery regulations do not consistently reflect quantity prices in less congested areas. *g In borough of Kings, Queens, and Richmond and in Manhattan south of Canal St., add delivery charge of $20.00 per trip. *h F.o.b. Beloeil (near Montreal), per 100 lb. forcite, 40%. Forcite 60%, $23.80

40% Ammonia Gelatin price ranges in other than urban areas, per lb. (except Seismograph Grades)

	C/L 20,000 lb. net	Tons	200 lb. lots
E of the Miss., except Fla and Me...	$0.2065	$0.2465	$0.2615
W of Miss. to Rocky Mtn. States, Fla. and Maine	.2115	.2515	.2665
Rocky Mtn. States	.2115	.2515	.2665
Pacific N. W. States	.2090	.2490	.2640
Pacific S. W. States	.2065	.2465	.2615

PILES, TIES F.O.B.

PILES

Prices per linear foot, fir and pine, bark off, f.o.b. cars, New York. Fir based on Wash. and Ore. points to New York shipping area; pine based on freight from Norfolk.

Dimensions	Points	Length	By Rail Pine*	By Rail Fir
12-in. at butt	6-in.	30 to 50-ft.	$0.51	....
12-in.—2-ft. from butt	6-in.	50 to 59-ft.	.54	....
12-in.—2-ft. from butt	6-in.	60 to 69-ft.	.58	....
12-in.—2-ft. from butt	6-in.	90 to 100-ft.	....	....
13-in.—3-ft. from butt	5-in.	91 to 100-ft.	....	....
14-in.—2-ft. from butt	6-in.	50 to 69-ft.	.50/.68	....
14-in.—2-ft. from butt	6-in.	70 to 79-ft.	.78/.88	.93
14-in.—2-ft. from butt	5-in.	80 to 85-ft.	.88/.93	.94
14-in.—2-ft. from butt	5-in.	85 to 89-ft.	....	1.00
14-in.—2-ft. from butt	5-in.	90 to 100-ft.	....	1.02

* Pine piling over 80-ft. available only in limited quantities.

RAILWAY TIES

Prices f.o.b. per tie box carload lots:

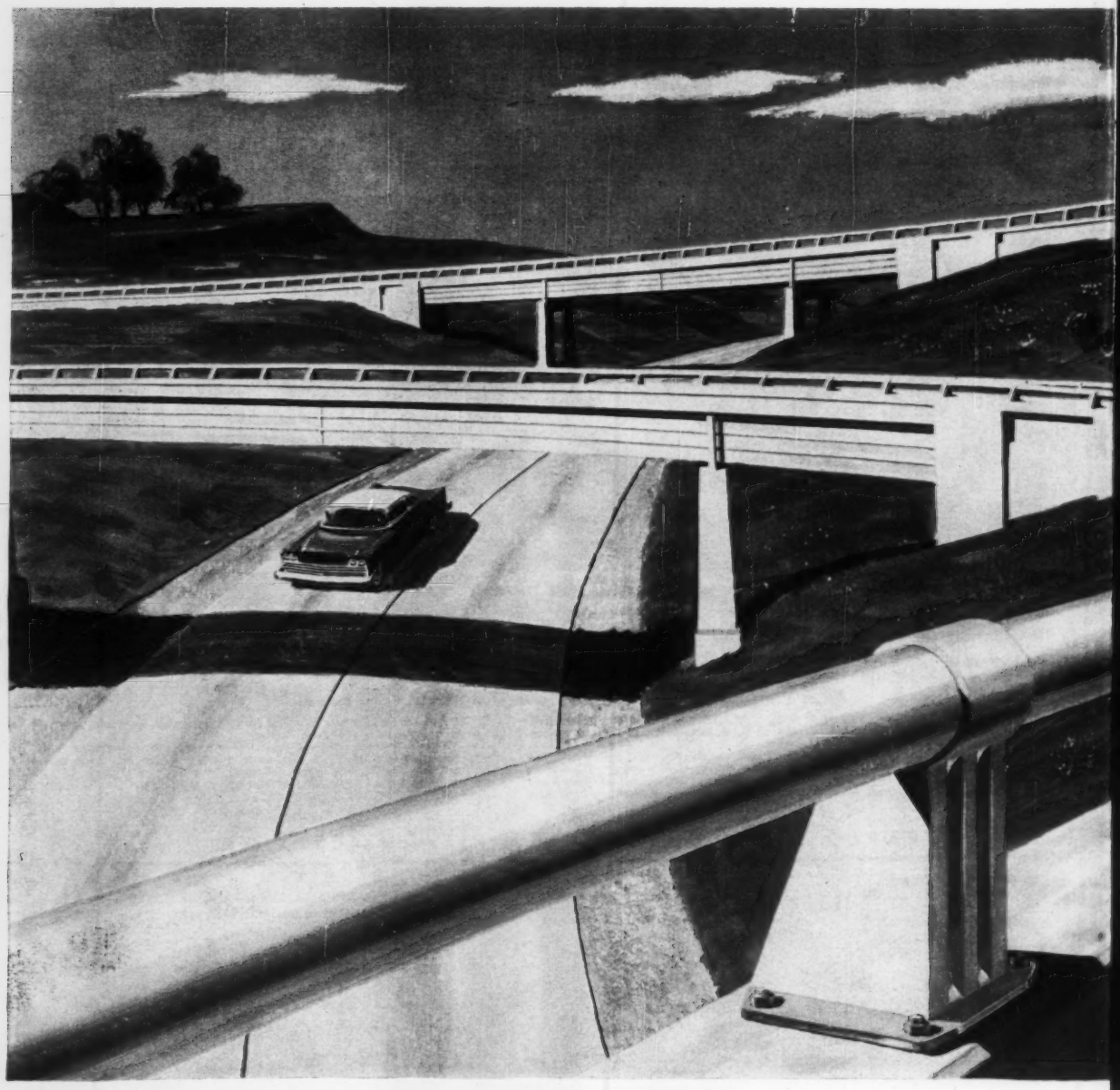
		6" x 8" x 8' Untr.	6" x 8" x 8' Tr.	7" x 8" x 8'6" Untr.	7" x 8" x 8'6" Tr.
Birmingham*	Hardwood, Grade 3	$1.70	$2.55	Gr. 5 $2.25	$3.33
	Grade 2	1.50	2.35	" 4 2.10	3.18
	Grade 1	1.15	2.00	" 3a 1.70	2.78
Chicago	Red Oak	....	3.90a	.....	4.50a
New York	S. L. Sap Pine	2.00	4.00	3.00	6.00g
	Mixed Oak	2.50	4.50	3.50	6.50g
Philadelphia	Red Oak	2.85/4.05	4.40/4.60	3.20/3.40	4.40/4.60
St. Louis	Mixed Oak	2.75	3.50a	3.00A	3.85aA
San Francisco	Douglas Fir	1.91ef	2.80ef	2.69ef	4.07caf

Tr.—Treated; Untr.—Untreated. a Creosoted. c Empty cell. eGreen f f.o.b. cars. g 7 x 9 x 8' 6" * Add 75c/tie freight charge to Birmingham. *A 7" x 9" x 9½"

CHEMICALS

Water, sewage treatment, road work, f.o.b. carlots, New York

Bleaching powder in drums f.o.b. works, per 100 lb	$5.02
Chlorine cylinders, liquid, per lb. f.o.b. works	.11
Calcium chloride, 77–80%, flaked, 100-lb. paper bag, f.o.b. works, ton	31.00
Silicate of soda, 52 deg., in drums, f.o.b. works, per 100 lb	2.65
Soda ash, 58%, in paper bags, per 100 lb. dense	1.90
Sulphate of aluminum, commercial, in 100-lb. bags f.o.b. works	2.05
Sulphate of copper, in bags, 99% per 100 lb. f.o.b. works	10.70



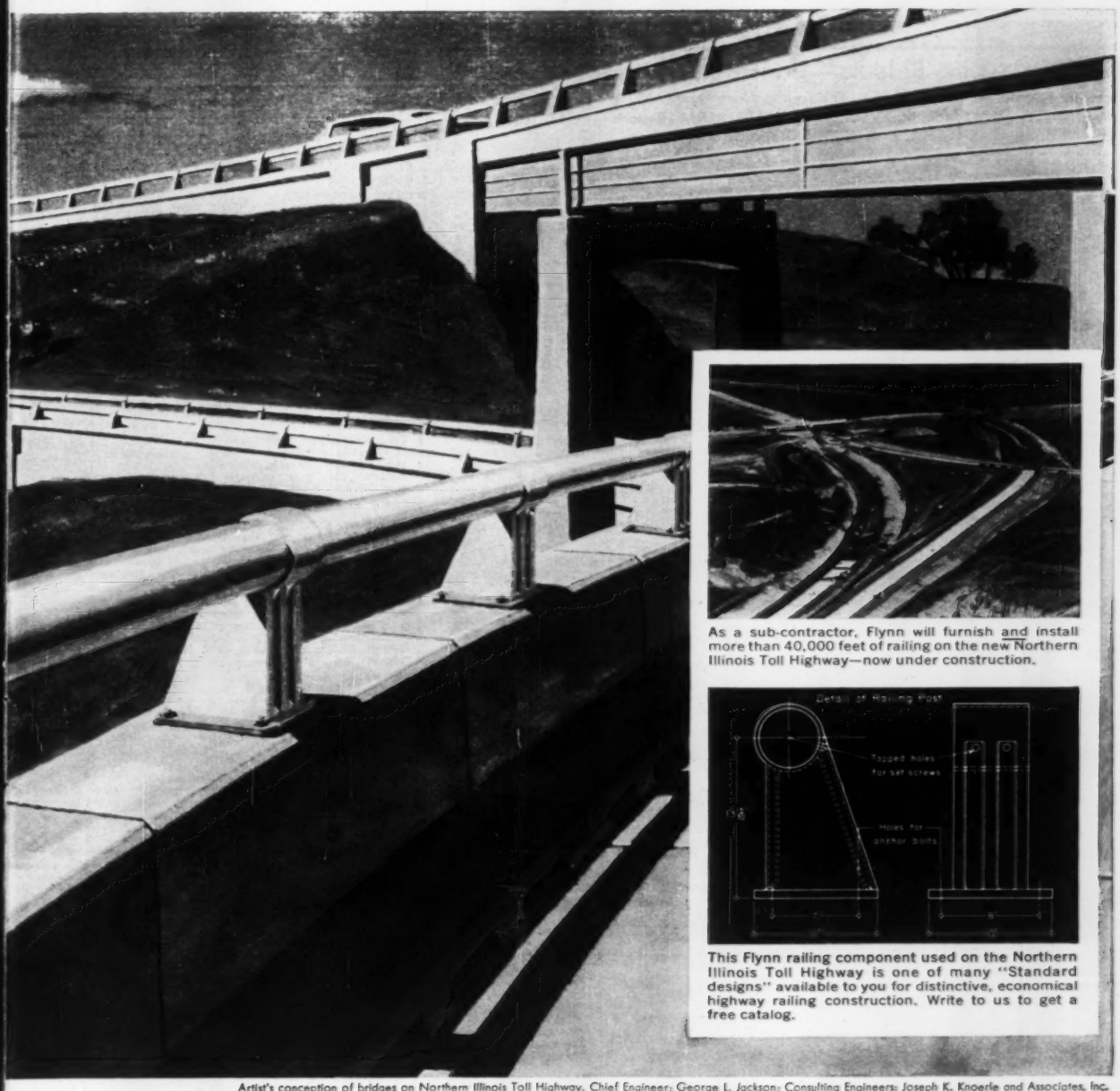
You may be paying twice

Here's how to save money before you buy . . .

Are you in the market for 40,000 feet of bridge railing, as the contractors for the Illinois State Toll Highway Commission were recently? Choose it wisely and well—what you finally wind up paying may be *twice* that of the initial cost of the rail itself, in the form of installation, replacement, and maintenance charges. Pick the wrong kind of rail, and your great-grandchildren will still be paying for it.

Are there any good guides to the *best* bridge railing? Several—and your own, patient investigations are probably the most significant. Find out, for example, what others have been doing, on important projects like the new Northern Illinois Toll Highway. Flynn *aluminum* post-and-rail combinations are being used for more than 40,000 rail-feet of bridge, overpasses, and approaches on this 187 mile super highway.

For very good reason, too. Flynn components are light, rust- and rot-proof. They're easily installed by one or two men, armed only with wrenches. They're good-looking, and more important, *they stay that way*—never need painting, call for minimum maintenance, and almost never require replacement.



As a sub-contractor, Flynn will furnish and install more than 40,000 feet of railing on the new Northern Illinois Toll Highway—now under construction.

This Flynn railing component used on the Northern Illinois Toll Highway is one of many "Standard designs" available to you for distinctive, economical highway railing construction. Write to us to get a free catalog.

Artist's conception of bridges on Northern Illinois Toll Highway. Chief Engineer: George L. Jackson; Consulting Engineers: Joseph K. Knoerle and Associates, Inc.

for the same bridge railing

The Illinois Tollway is just one of many important works where Flynn bridge railing stands out smartly. Others include the Chicago Calumet Toll Highway, Philadelphia's impressive new Walt Whitman Bridge, and the Pennsylvania-New Jersey Turnpike.

Want details? We'll send you a free copy of our latest bridge railing catalog, containing specifications, design data, and details on dozens of distinctive railing designs, if you'll write on your letterhead to the main office. Meanwhile, if you're planning a project at present, call the man from Flynn. He'll help you select the right bridge railing, right away.

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FLYNN

ALUMINUM

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BUILDINGS—BA

▲ **Mass., Lakeville**—SCHOOL—BA 6/6—Freetown-Lakeville Regional School Dist., Mrs. Louis C. Welch, secy., Freetown Hall, Assonet Village, regional high school, Howland Rd. $1,540,000. Plans deposit $50. Israel T. Almy, 56 North Main St., Fall River, archt. CD 10/9.

▲ **Conn., Enfield**—PRISON—BA 6/9—Bd. Directors, Connecticut State Prison, Wethersfield, for Minimum Security Prison, incl. administration bldg., five housing bldgs., dining hall, gymnasium, school bldgs., chapels and industrial bldgs. $3,500,000. CD 8/10/54.

BUILDINGS—LB & CA

▲† **Blount Brothers Constr. Co.**, 79 Commerce St., Montgomery, Ala., LB **$8,560,445**, est. $8,858,079, BOMARC missile launching site, Otis Air Force Base, ENG-19-016-58-127, FALMOUTH, MASS. U. S. Eng., 150 Causeway St., Boston, Mass. Bids May 7. CD 4/7.

BUILDINGS—LB & CA

▲ **Daniel O'Connell's Sons, Inc.**, 480 Hampden St., Holyoke, Mass., CA **$2,079,582**, est. $1,800,000, HOSPITAL addn., alterations, Chestnut St., SPRINGFIELD, MASS. Springfield Hospital, 759 Chestnut St., Springfield, Mass. Bids Apr. 9. CD 4/14, under LB.

▲ **E. & F. Constr. Co.**, 94 Wells St., Bridgeport, Conn., LB **$2,416,000**, (6 bidders) HIGH SCHOOL, TRUMBULL, CONN. Town of Trumbull, School Bldg. Comn., Middlebrooks Ave., Trumbull, Conn. Bids May 7. CD 4/23.

▲ **Green Manor Estates, Inc.**, 681 Park St., Manchester, Conn., Owner Builds, **$2,445,000**, 163 HOUSES, Parker Farms Rd., WALLINGFORD, CONN. CD 10/8/56.

MIDDLE ATLANTIC

BUILDINGS—BA

▲† **Md., Aberdeen Proving Ground**—BARRACKS, etc.—BA 6/3—U. S. Eng., 24 St. and Maryland Ave., Baltimore 18, 3 story brick (two) company 57 x 169 ft. barracks; 57 x 209 ft. administration and storage bldg.; 86 x 136 ft. mess hall and 1 story 13 x 54 ft. heating plant. Over $1,000,000. Lubin-McGaughy & Assocs., 1300 Connecticut Ave. N.W., Wash., D. C., engrs. CD 3/13.

▲ **D. C., Wash.**—HOUSING—BA 6/12—National Capital Housing Auth., 1729 New York Ave. N.W., constr. 158-unit Housing Proj. No. DC-1-30, Hopkins Apartments, located between K and L Sts., and between 12th and 14th Sts. S.E. Plans deposit $50. McLeod & Ferrara, 1200 18th St., N.W., Wash., D. C., archts. CD 12/9/55.

HEAVY CONSTRUCTION—LB & CA

▲ **Channel Constr. Co. (Peter Kiewit Sons' Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb., **Morrison Knudsen Co. Inc.**, 319 Broadway Ave., Boise, Idaho and **B. Perini Corp.**, Framington, Mass. and **Walsh Constr. Co.**, 711 3rd Ave., New York, N. Y.,) CA **$31,855,000**, Contr. N-8, Section 4, Waterways and Reservoir and appurtenant works in Lewiston, Niagara Co., Spec. No. PA-N-23005, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York, N. Y. Bids Apr. 24. CD 4/28, under LB.

▲ **Ralph Tomasetti & Co.**, 1611 73 St., Brooklyn 4, N. Y., LB **$1,809,125** (11 bidders), interceptor-collector sewer and appurtenances in South Conduit Ave. from built sewer in 150th Ave. to proposed force main in south Conduit Ave. at point about 300 ft. east of easterly line of 102 St. at former Peconic St. also in 100 St. from proposed pumping station to 99th St., 99th St. from 100th St. to 157th Ave., 157th Ave. from 99th St. to 87th St., 87th St., from 157th Ave. 99th St. to 87th St., 87th St. from 157th Ave. to southerly side of Shore Parkway at 87th St. to northerly side of Shore Parkway at 86th St.; Shore Parkway (northerly side) from 86th St. to 84th St., 84th St. from Shore Parkway (northerly side) to 155th St., 155th Ave. from 84th St. to 81st St., 81 St. from 155th Ave. to South Conduit Ave. South Conduit Ave. from 81st St. to point about 280 ft. westerly therefrom thence in northerly direction across Conduit Blvd. in prolongation of 79th St. to intersection of North Conduit Ave. and 79th St. also constr. regulator chamber in North Conduit Ave. at 79th St. and emergency overflow in Cross Bay Blvd., easterly side from 157th Ave. to point about 210 ft. southerly therefrom thence at right angles from point thru sewer easement easterly to Shellbank Basin; incl. tide gate at Basin and constr. sanitary sewer and appurtenances in 100th St. from proposed interceptor-collector sewer about 100 ft. south of 155th Ave. to 155th Ave., and high level sanitary sewer and appurtenances in 155th Ave northerly from 100th St. to 101 St., 101 St. westerly from 155th Ave. to South Conduit Ave., also partial grading, where necessary in South Conduit Ave. between Linden Blvd. and 81 St., 81st St between South Conduit Ave. and 151st Ave., 87th St. between 156th Ave. and 157th Ave., 157th Ave. between Bridgerton St. and 99th St., 99th St. between 157th Ave. and 100th St., 100th St. between 99th St. and 155th Ave. and 155th Ave. between 100th St. and 101st St., Fourth Ward, Queens Boro, NEW YORK. President Queens Boro, Boro Hall, 120-55 Queens Blvd., Kew Gardens 24, New York, N. Y. Bids May 5. CD 4/30, under N. Y., New York

▲ **NEW YORK**—State Dpt. P. Wks., The Gov. Alfred Smith Office Bldg., Albany,
Lane Constr Corp., 965 E. Main St., Meridan, Conn., CA **$5,991,758**, est. $7,309,000, 9 in. c. conc. 2.5 mi. six-lane divided section Rochester Eastern Expressway, 3.43 mi. various access and service roads in Rochester, starting at Inner Loop route near Clinton Ave. south and extending eastward along abandoned subway bed to Colby St., graded separation structures will be built at Clinton Ave., Alexander St., Averill Ave., Meigs St., Goodman St., Monroe Ave. and Culver Rd. incl. pedestrian overpass at Colby St., Monroe Co. Bids Apr. 3. CD 3/28, under LB.

▲ **NEW JERSEY**—Comr. State Hy. Dpt., 1035 Parkway Ave., Trenton,
George M. Brewster & Son, Inc., 275 Fort Lee Rd., Bogota, N. J., CA **$2,815,380**, grading, paving, bridges and walls 1.333 mi. Rte. 21 Freeway, Sect. 1B, Towns of Belleville and Nutley, Essex Co., Bids Apr. 15. CD 4/17, under LB.

BUILDINGS—LB & CA

▲ **James D'Agostino**, 133 Cedar Lane, Teaneck, N. J., Owner Builds, **$1,225,000**, 2½ story, 110-unit masonry garden APARTMENT, Westervelt Ave., TENAFLY, N. J. Harsens & Johns, Piermont Rd. and Summit St., Tenafly, N. J., archts.

SOUTH

HEAVY CONSTRUCTION—BA

▲ **W. Va., Weirton**—BA 6/4—City, City Hall, main trunk sewer along Main St. and Freedom Way and constr. sewage treatment plant. $2,500,000, Alden E. Stilson & Assocs., 245 N. High St., Columbus O., engrs. CD 10/10.

▲† **Fla., Jacksonville**—AIR STATION IMPRVS.—BA 6/17—Dist. P. Wks. Office, Sixth Naval Dist., Bldg. No. 13, U.S. Naval Base, Charleston, S. C., Runway 11-29, U.S. Naval Air Station, Cecil Field (OLF Whitehouse) Contr. NBy 809, Spec. 809/56, Over $1,000,000; constr. BOQ (2nd increment) U.S. Naval Air Station, Cecil Field, NBy 10257, Spec. 10257/58, $250,000-$500,000; three 180-man barracks, U.S. Naval Air Station, Cecil Field, NBy 8655, Spec. 8655 $500-000-$1,000,000. CD 9/17.

▲ **Florida**—TUNNEL, etc.—BA 6/26—State Rd. Dpt., Tallahassee, constr. tunnel with two ventilation bldgs. superimposed thereon and two open ramp sections; related changes in existing streets, storm sewers; detours, and incid. items, 0.43 mi., in Fort Lauderdale at New River, FAP. No. U-003-3 (28) (Job No. 8601-204,) SR 5 (US 1), Broward Co. $5,500,000. A. C. Church, Tallahassee, state hy. engr.

BUILDINGS—BA

▲ **Fla., Gainesville**—HOSPITAL—BA 6/5—Alachua Co. Bd. Trustees, Gainesville, 178-bed Alachua General Hospital, paving, grading, etc., Plans deposit $50, refundable. Charles H. McCauley, Jackson Bldg., Birmingham, Ala., archt. CD 3/6/57.

HEAVY CONSTRUCTION—LB & CA

▲ **Troup Bros., Inc.**, 4151 S. Dixie Hy., Miami, Fla., CA **$1,644,663**, Contr. 3-C, grading, paving and utilities for automobile parking lots and access roads, Miami International Airport, MIAMI, FLA. Bd. Comrs. Dade Co. Port Auth., Court House, Miami, Fla. Bids Apr. 29, awarded May 6, CD 5/6, under LB.

▲† **Boyd & Goforth, Inc.**, Box 10436, Charlotte, N. C., CA **$1,580,918**, alt. No. 2, dining hall airmen's dormitories and electr. rehabilitation of existing dormitories, MacDill Air Force Base, ENG. 08-123-58-33, TAMPA, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. Bids Apr. 15. CD 4/22, under LB.

▲† **McWilliams Dredging Co**, Box 584, New Orleans, La., LB **$1,723,040** (5 bidders), dredging to contain 9,680,000 cu. yd. for Old River Control, Outflow Channel, Inv. No. 58-246, Concordia Parish, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. Bids May 1. CD 4/17.

▲† **Hardaway Constr. Co.**, 15 E. 11, Columbus, Ga., LB **$19,058,690**, est. $17,043,051 (9 bidders) Navigation Lock (left bank Ohio River near existing Lock No. 41), CIVENG-15-029-58-50, KENTUCKY and INDIANA. U. S. Eng., P. O. Box 59, Louisville, Ky. Bids May 8. CD 4/9.

BUILDINGS—LB & CA

▲ **Hillside Development Corp.**, 4242 4th St., N.E., Wash., D.C. Owner Builds. **$2,000,000** 140 pre-cut HOUSES in Kent Area, Mt. Vernon Blvd. below Alexandria, FAIRFAX, VA.

▲ **Frank J. Rooney, Inc.**, 5880 NE 4th Ave., Miami, Fla., CA **$3,000,000**, 2 story, 145,000 sq. ft. Store addn., 1501 Biscayne Blvd., MIAMI, FLA. Jordon Marsh, 1501 Biscayne Blvd., Miami, Fla. Weed Johnson Assocs., 550 Brickell Ave., Miami, Fla., archts.

▲† **Foster & Creighton**, 1st American National Bank Bldg., Nashville, Tenn. CA **$2,455,300** 3 story, 109,000 sq. ft. 175 bed concrete frame, brick masonry HOSPITAL, OAK RIDGE, TENN. Atomic Energy Comn., P.O. Box E, Oak Ridge, Tenn. Bid about Apr. 15, awarded May 6. CD 3/6.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲† **Illinois**—BA 5/28—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, Nike anti-aircraft missile installations at Hecker, Marine and in Pere Marquette State Park. Over $6,000,000, CD 6/9/55.

BUILDINGS—BA

▲ **Ill., North Chicago**—CHEMICAL LABORATORY—BA 5/29—Abbott Laboratories, Sheridan Rd. and 14th St., chemical lab. bldg. R-18, addn., concrete paving. $5,000,000. Naess & Murphy, 80 E. Jackson Blvd., Chicago, archts., CD 3/25/57.

▲ **Ill., Chicago**—HOUSING—BA 6/3—Chicago Housing Auth., 608 S. Dearborn St., 8 story, public housing for elderly persons (Julia C. Lathrop Homes) shops, stores, Diversey Parkway and Clybourn Ave., $1,900,000. Loewenberg & Loewenberg, 111 W. Monroe St., archts. CD 12/20/56.

HEAVY CONSTRUCTION—LB & CA

▲ **Sam W. Emerson Co.**, 1836 Euclid Ave., Cleveland, O., LB **$2,298,000** (5 bidders) Ridge Road incinerator, CLEVELAND, O. City, Dpt. P. Service, Louis L. Drasler, dir. City Hall, Cleveland 14, O. Bids May 8. CD 4/24.

▲ **R. Hansen Co.**, 2646 N. Moreland Blvd., Cleveland 20, O., CA **$1,761,042**, Contr. No. 6, sewage disposal plant, EUCLID, O. City, 585 E. 222nd St., Cleveland 23, O. Bids Mar. 31, awarded May 6. CD 4/8, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	**Middle West**
Middle Atlantic	**West of Mississippi**
South	**Far West**

PROPOSED WORK

Water Supply	**Public Buildings**
Sewers, Waste Disposal	**Mass Housing**
Bridges	**Commercial Buildings**
Streets & Roads	**Industrial Buildings**
Earthwork, Waterways	**Unclassified**

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
ENR	**Engineering News-Record**
CD	**Construction Daily**

For additional reports see Construction Daily.

▲ **Price Bros.-McClung, Inc.**, 1800 Summit St., Toledo, O., CA **$1,316,512**, est. $1,450,000 (2 bidders), port terminal imprvs., Stage 1, Contr. 1, dredging, bulkhead construction, and hydraulic fill, Presque Isle Site, clearing site; 2,300 ft. earth dyke constr., 800 ft. steel sheet pile bulkhead; 255,000 cu. yd. removal silt, 325,000 cu. yd. dredging, 650 tons riprap (revised document Contr. 4/15), TOLEDO, O. Toledo-Lucas Co. Port Auth., 241 Superior St., Toledo 4, O. Bids May 5, awarded May 8. CD 5/12, under LB.

▲ **Midwestern Constructors**, 105 N. Boulder, Tulsa, Okla., CA **$6,411,000**, natural gas loopline from Joliet Station to Howard Ave. and Hy. 19; 38 mi. between Joliet and Elgin, Will, Kane and Cook Counties; CA **$1,975,000**, natural gas loopline from point on north bank of Illinois River to Texas-Ill. regulator station 9 mi., Joliet, Will Co., ILLINOIS. Texas Illinois Natural Gas Pipeline Co., 122 S. Michigan Ave., Chicago, Ill. CD 9/28/56.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield. Bids opened 5/6,

Ill.—**Robert A. Black, Inc.**, 13912 S. Halsted, Chicago, Ill., LB **$350,885**, c. conc. 2.09 mi. FA 16, Edwards and Wabash Counties; LB **$550,416**, concrete base course widen 7.92 mi. and concrete base course 0.86 mi. Ill. 15, Wayne Co.;

Ill.—**Zimmerly Constr. Co.**, Marshall, Paris, Ill., LB **$714,973**, concrete base course wid'n. 8.95 mi.; concrete base 0.94 and c. conc. 0.48 mi. Coles Co.;

Ill.—**Rossi Trucking Co.**, 1825 S. Kostner Ave., Chicago 23, Ill., LB **$877,858**, earth grading and draining facilities on 1.11 mi. Congress St. Expressway, Cook Co.;

Ill.—**O'Connor Constr. Co.**, 320 Reisch Bldg., Springfield, Ill., LB **$623,805**, c. conc. 3.12 mi. FA 192, Kane and Kendall Counties;

Ill.—**Fred Weber, Inc.**, 7929 Alabama Ave., St. Louis 11, Mo., LB **$1,210,231** c. conc. 2.43 mi. FAI 7, Madison Co.;

Ill.—**E. H. Swenson & Son**, 14 Henderson Ave., Joliet, Ill., LB **$948,814**, bit. surf. treatment, 1 concrete slab bridge 11.01 mi. and gravel or crushed stone shoulders, 14.33 mi., all on US 66, Will Co. CD 4/23.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield, Bids opened 5/6,

Ill.—**N. S. Gorman Constr. Co.**, 4408 State, East St. Louis, Ill., LB **$844,254**, 9 superstructures, 12 approach spans, all on Ill. 15, Clinton and Washington Counties,

Ill.—**Arcole Midwest Corp.**, 3225 Main, Evanston, Ill., LB **$722,882**, 3 grade separations, 2 open piers, 2 concrete abutments etc., wall and stairs, all on FAI 2 (Northwest Expressway), Cook Co.;

Ill.—**Thomas McQueen Co.**, 1313 S. Circle Ave., Forest Park, Ill., LB **$688,625**, 2 grade separations, 2 abutments, 2 open piers 1 stair tube, all on FAI 2 (Northwest Expressway) Cook Co.;

Ill.—**McCann & Co., Inc.**, P. O. Box 201, Springfield, Ill., LB **$426,679**, 1 railroad grade separation on FA 132 (Alton belt line) Madison Co. CD 4/21.

▲ **Arcole Midwest Corp.**, 3225 Main St., Evanston, Ill., LB **$1,682,638**, NW Expressway, 4 grade separations, Harlem, Oriole, Canfield and Cumberland Aves., Proj. U-265(21); LB **$877,029**, NW Expressway, 3 grade separations, Sayre Ave., Natoma Ave and E. River Rd., Proj. U-265(20); LB **$1,030,030**, NW Expressway, 2 grade separations, Central Ave. and Foster Ave., Proj. U-265(18); LB **$568,569**, NW Expressway, 2 grade separations, Austin and Nagle Aves., Proj. U-265-(19); LB **$955,568**, grade separation over NW Expressway, Sec. 267-112-15d, proj. BU-265(15), CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. CD 4/29.

▲ **Power Constr. Co.**, 125 S. Marion St., Oak Park, Ill., CA **$2,000,000**, mausoleum addn., HILLSIDE, ILL., Queen of Heaven Catholic Cemetery, 1200 S. Wolf Rd., Hillside, Ill. CD 4/10.

▲ **MICHIGAN**—State Hy. Dpt., John C. Mackie, hy. comr., Stevens T. Mason Bldg., Lansing,

Mich.—**Charles J. Rogers, Inc., Jutton-Kelly Co. & Cooke Contg. Co.**, 1116 Penobscot Bldg., Detroit, Mich., CA **$1,889,228**, est. $2,020,000. 36 ft. concrete pavement ramp and utility changes Edsel Ford Expressway, located at Moran, Harper and Moross Aves., Detroit, Wayne Co.;

Mich.—**Canonie Constr. Co.**, South Haven, Mich., CA **$1,190,336**, est. $1,160,000, grading, drainage and surf. 11.742 mi. M-140, F 11072-C2-U (F 24-12), Berrien and Van Buren Counties;

Mich.—**Sargent Constr. Co.**, 2840 Bay Rd., Saginaw, Mich., CA **$1,488,380**, est. $1,488,880, grading, drainage 4.604 mi. and dual 24 ft. concrete pavement US-12. BI 13081 C1-RN B1 39-25 C2-RN, Kalamazoo and Calhoun Counties;

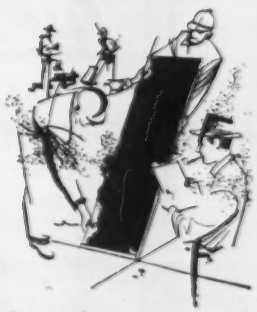
Mich.—**L. W. Edison Co.**, 924 Floral Dr., Grand Rapids, Mich., CA **$817,800**, est. $1,110,000, grading, drainage structures, 0.512 mi. and one bridge US-31 relocation, Ferrysbury, BM 70014 C4-UN Bm 70016 C3-RN, Ottawa Co.;

Mich.—**Denton Constr. Co.**, 20415 Mack Ave., Grosse Pointe, Mich., CA **$890,788**, concrete base course wid'n., pavement 3.802 mi. M-24, Pontiac. M 63091 C2-R M 63990 C1 U 63091 C1-U (U 230 13), Oakland Co. Bids Apr. 23. Grand total $6,276,532. CD 5/5, under LB.

BUILDINGS—LB & CA

▲ **Brown Constr. Co.**, 2520 Payne Ave., Cleveland 14, O., CA **$1,417,420**, CITY HALL in Memorial Park, LAKEWOOD, O. City, City Hall, 14532 Lake Ave., Lakewood 7, O. Bids Apr. 30, awarded May 5. CD 5/5, under LB.

▲ **A. Mourek & Son, Inc.**, 3128 S. Austin Blvd., Cicero, Ill., CA **$2,250,000**, 250,000 sq. ft., FAC-



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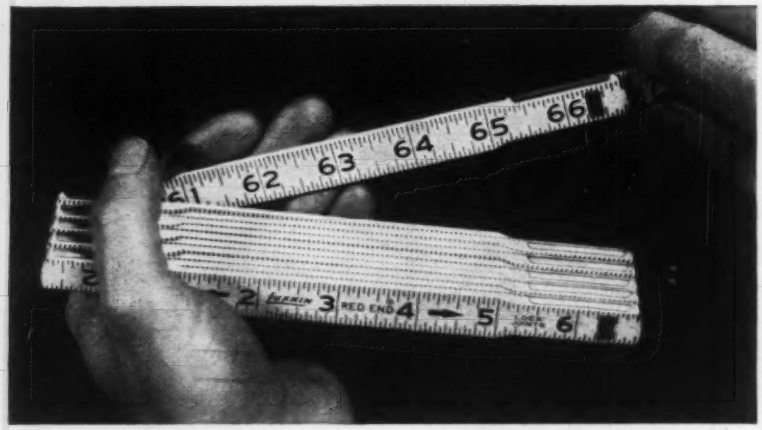

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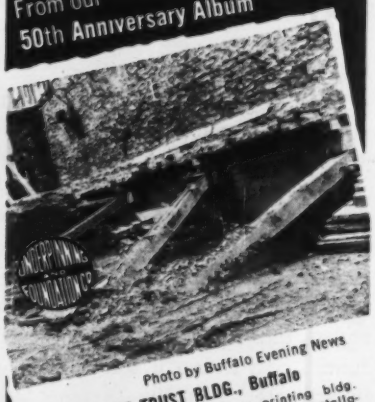

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MARINE TRUST BLDG., Buffalo

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TORY and OFFICE BLDG., 25th Ave. and Cermak Rd., BROADVIEW, ILL. Amphenol Electronics Corp., 1830 S. 54th St., Cicero, Ill. CD 6/4.

▲ **Dahlstedman Co.**, 7 S. Dearborn St., Chicago, Ill., CA $1,300,000, 7 story, 78 unit, brick married students DORMITORY, 900-12 W. Belden Ave., CHICAGO, ILL. McCormick Theological Seminary, 2330 N. Halsted St., Chicago, Ill. CD 4/21.

▲ **Chell & Anderson, Inc.**, 5425 N. Kedzie Ave., Chicago, Ill., LB $3,302,000, 3 BARRACKS BLDGS., 3 story water steam distr. sys., concrete curbs, gutters, bit. paving at Great Lakes Naval Training Center, Spec. No. 12662-57, GREAT LAKES, ILL. Ninth Naval Dist., Great Lakes, Ill. CD 3/21.

▲ **Walsh Constr. Co.**, 140 N. Dearborn St., Chicago, Ill., CA $1,501,382, Northwest WARD BLDG. addn., Oak Forest Institution W. 159th and S. Cicero, OAK FOREST, ILL. Cook Co., Chicago, Ill. CD 3/18, under LB.

▲ **Johnson & Henrickson**, 1215 Lockwood Ave., Racine, Wis., LB $1,300,600 (5 bidders), general contract Jerstad-Agerholm JUNIOR HIGH SCHOOL, RACINE, WIS., Bd. Educ., Racine, Wis. Bids Apr. 30. CD 4/1.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

▲ **Kan., Hutchinson**—BA 5/29—City, C. H. Ash, clk., City Hall, 12 m.g. extended trickling type, sewage treatment plant, auxiliaries and appurtenances on Arkansas River. $1,500,000. Hefling Engineering Co., 209 W. 23rd St., Hutchinson, Kan., engr.

HEAVY CONSTRUCTION—LB & CA

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

Alley Constr. Co., Faribault, Minn., CA $1,115,361, grade, sand-grav., sub-base and grav. base 8.9 mi. between Byron and Jct. T.H. 52 at Rochester, Olmsted Co. Bids Apr. 11. CD 4/22, under LB.

▲ **Fruin-Colnon Contg. Co.**, 1706 Olive St., St. Louis 3, Mo., CA $1,196,240, est. $1,130,000, impry. MacArthur Bridge across Mississippi River between St. Louis Mo. and East St. Louis, Ill., incl. replacing present blacktop highway deck, surf. concrete, asphalt, etc., ST. LOUIS, MO. City, Bd. P. Service, 304 City Hall, 12 Blvd. and Market St., St. Louis 3, Mo. Bids Apr. 1 CD 4/3, under LB

▲ **Parsons Constr. Co.**, 2512 Deer Park Blvd., Omaha, Neb., CA $2,024,000 sewage disposal plant, 60th and Harrison Sts., OMAHA, NEB. City, M. J. Dineen, clk., City Hall, Omaha, Neb. Bids Feb. 18, awarded Apr. 15. CD 2/24, under LB.

▲† **Olson Constr. Co.**, 410 S. 7th St., Lincoln, Neb., CA $2,290,351, est. $2,142,275, 2 story, 75-bed, brick, masonry HOSPITAL and UTILITIES, Schilling Air Force Base, ENG-23-028-58-29, SALINA, KAN. U. S. Eng., 1800 Federal Office Bldg., Kansas City, Mo. Bids Apr. 15. CD 4/21, under LB.

BUILDINGS—LB & CA

▲† **C. H. Leavell & Co., and Dan R. Ponder, Inc.**, 327 Morgan Ave., El Paso, Tex., LB $6,498,700, est. $4,800,000, 400 family HOUSING units, Holloman Air Force Base, ENG-29-600-58-92, ALAMOGORDO, N. M. Directorate of Procurement, Base Theatre, Holloman Air Force Base, Alamogordo, N. M. Bids Apr. 22. CD 3/31.

▲ **Floyd Richards**, 511 W. 5th St., Amarillo, Tex., LB $1,139,428, est. $1,000,000, FINE ARTS, CANYON, TEX. West Texas State College, Canyon, Tex. Bids Apr. 24. CD 3/19.

FAR WEST

BUILDINGS—BA

▲ **Calif., San Bernardino**—COUNTY OFFICE—BA 6/4—Bd. Supervs. San Bernardino Co. Courthouse, constr. county office bldg. $1,200,000. Stiles & Robert Clements, 210 W. 7th St., Los Angeles, archts.-consult. engrs. CD 4/18.

HEAVY CONSTRUCTION—LB & CA

▲ **UTAH**—State Rd. Comm., State Capitol, Salt Lake City,

Strong Co., Springville, Utah. CA $2,117,285, est. $2,082,207 1st Contract 3½ in. plant mix bit. surf. for 5.529 mi. Interstate Hy. 15 FAP Proj. No. 1-01-1 (2), Washington Co. CD 3/31, under LB.

▲† **Bureau Reclamation, Dpt. Interior**, Denver Federal Center, Denver, Colo., rejected bids Apr. 29, 220,000 tons bulk pozzolen for Glen Canyon Dam and Powerplant, Colorado River Storage Proj. DS 5012, ARIZONA. LB $1,364,000 ($6.20 per ton) $3,066,800 ($13.94 per ton) LB $2,200,000 ($10 per ton). Will re-advertise. CD 5/5, under LB.

▲† **L. Miller, Inc.**, P. O. Box 3338, Fort Worth, Tex., CA $1,446,184, est. $1,576,767, constr. hydrant fueling sys., Schedule B, Larson Air Force Base, ENG-45-164-58-25, MOSES LAKE, WASH. U. S. Eng., City-County Airport, Walla Walla, Wash., Bids Apr. 23, CD 4/28, under LB;
N. Fiorito Co., 844 W. 48 St., Seattle, Wash., CA $1,173,985, est. $1,244,270, (3 bidders), grading, paving with b. conc. and cement of operational apron and apron access taxiways, Schedule A, (Moses Lake, Wash.).

▲ **CALIFORNIA**—State Div. Hys., 1120 N. St., Sacramento,

Peter Kiewit Sons Co., 442 Post St., San Francisco, Calif., CA $1,587,482 grading, surf. to constr. 6.7 mi. 4 lane expressway on State Sign Rte. 37 Black Point Cutoff, from U.S. Hy. 101 to ½ mi. west of Sears Point, incl. 720 ft. bridge over Novato Creek

and a bridge with access road to carry expressway over Atherton Av.IV-Mrn-Son 8A, Marin and Sonoma Counties. Bids Apr. 23, awarded May 6. CD 4/25, under LB.

▲ **MacDonald & Kruse,** 7540 Wheatland Ave., Sun Valley, Calif. LB **$3,228,581,** est. $2,990,000 (5 bidders) imprv. Santa Ana River Channel E-1, Part 1, incl. portions of Talbert and Greenville-Banning Channels, SANTA ANA, CALIF. Orange Co. Flood Control Dist., Courthouse, Santa Ana, Calif. Bids May 7. CD 4/11.

BUILDINGS—LB & CA

▲ **Combustion Engineering, Inc.,** 200 Madison Ave., New York, N. Y. LB **$9,254,710** (3 bidders) furnishing, erecting BOILER UNITS at Haynes Steam Plant, LOS ANGELES, CALIF. Los Angeles Dpt. Water & Power, 311 S. Spring St., Los Angeles, Calif. Bids May 6. CD 4/23.

▲ **C. L. Peck,** 816 W. 5th St., Los Angeles, Calif., CA **$1,350,000,** 3 concrete, steel RETAIL STORES, BLDG. "B" Fashion Square SANTA ANA, CALIF. Bullocks Inc., 601 S. Westmoreland St., Los Angeles, Calif.

▲ **Riha Constr. Co.,** 8150 Center St., La Mesa, Calif. LB **$1,256,000** (3 bidders) constr. Harvey L. Lewis JUNIOR HIGH SCHOOL, SAN DIEGO, CALIF. San Diego Unif. School Dist., 825 Union Ave., San Diego, Calif. Bids May 8. CD 4/23.

CANADA

BUILDINGS—SLC

▲ **Ont., Windsor**—PLANT—Hiram Walker & Sons Ltd., 2067 Sandwich St. E., soon lets contract, plant housing bottling, case storage, shipping and receiving operations. Smith, Hinchaman & Grylls Assocs. (Canada) Ltd., Canada Trust Bldg., engrs. CD 5/27.

HEAVY CONSTRUCTION—LB & CA

▲† **Five Boro Constr. Corp.,** 2 Lafayette St., New York 7, N. Y., U.S.A., LB **$4,812,000,** 200 unit family housing and services, of these 198 will be 2 story, full bsmnt., semi-detached wooc frame constr. on cast-in-place concrete fdns. with exterior of cement, 2 houses to be single family units, 1 story, fully detached same type constr., Harmon Air Base, STEPHENSVILLE, NEWFOUNDLAND. U. S. Eng., Eastern Ocean Corps of Engrs., Harmon Air Base, Stephensville, Newfoundland. Durnford, Bolton, Chadwick & Ellwood, 4101 Sherbrooke St. W., Montreal, Que., archts. Foundation of Canada Engrs. Corp. Ltd., 1980 Sherbrooke St. W., Montreal, Que., engrs. Bids Apr. 30. CD 3/10.

BUILDINGS—LB & CA

▲ **Bennett & White (Alberta) Ltd.,** 11239 83rd St., Edmonton, Alta., CA **$2,443,254,** NURSES' RESIDENCE, and SCHOOL, EDMONTON, ALTA. Royal Alexandra Hospital Bd., 111th Ave., Edmonton, Alta. Bids Mar. 31, awarded May 5. CD 4/22, under LB.

▲ **Bird Constr. Co. Ltd.,** Sargent and Erin Sts., Winnipeg, Man., CA Est. **$5,000,000,** PLANT, TRANSCONA (Winnipeg) MAN. Griffin Steel Foundries Ltd., Brouklette St., P. O. Box 310, St. Hyacinthe, Que. Moody & Moore, 295 Broadway Ave., Winnipeg, Man., archts. Awarded May 5. CD 2/26/57.

▲ **Louis Donolo, Inc.,** 8320 St. Lawrence Blvd., Montreal, Que., LB Approx. **$17,750,000** (6 bidders) SHOPPING CENTER, incl. supermarket and other stores in large dome structure, with underground parking facilities, Cote des Neiges, Barclay, Legace and MacKenzie Aves., MONTREAL, QUE. Amsterdam Development Corp., c/o Durnford, Bolton, Chadwick & Ellwood, 4101 Sherbrooke St. W., Montreal, Que. Foundation of Canada Eng. Corp. Ltd., 1980 Sherbrooke St. W., Montreal, Que., engrs.

U. S. POSSESSIONS

BUILDINGS—LB & CA

▲† **Murray-Sanders Co.,** 2116 S. Main St., Santa Ana, Calif., CA **$17,607,000,** CAPEHART HOUSING, 1,140 units, Navy Air Station, BARBERS POINT, T. H. U. S. 14th Naval Dist., Navy 128 Fleet Post Office, San Francisco, Calif. Bids Apr. 8. CD 5/6, under LB.

▲† **Len Co. & Assoc.,** 8203 W. 3rd St., Los Angeles, Calif., CA **$9,141,777,** CAPEHART HOUSING, 650 units, PEARL HARBOR, T. H. U. S. 14th Naval Dist., Navy No. 128 Fleet Post Office, San Francisco, Calif. Bids 3/28. CD 5/6, under LB.

AMERICANS ABROAD

HEAVY CONSTRUCTION—LB & CA

▲† **Peter Kiewit Sons Co. of Canada, Ltd.,** 1035 Beamont St., Montreal, Que., LB **$3,138,980,** constr. 100 housing units, 2 dining halls, dormitory service club, power plant addn. and electrical work in hangars, Goose Bay Air Base, Goose Bay, LABORADOR. U. S. Eng., Dist., Eastern Ocean Corps of Engrs., 346 Broadway, New York 13, N. Y. Bids Apr. 30. CD 3/14.

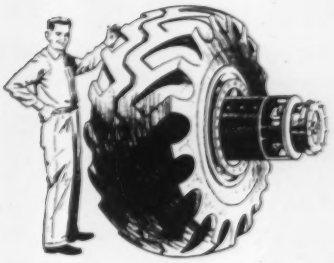
PROPOSED PROJECTS

WATER SUPPLY

▲ **Tex., Gilmer**—Upshur Water Control & Imprvt. Dist. No. 1, Gilmer, c/o D. T. Lloyd, dam and reservoir on Little Cypress Creek, **$1,000,000;** water distr. lines, **$400,000.** Homer A. Hunter Assocs., 3708 Abrams Road, Dallas, consult. engrs. CD 7/22.

SEWERS, WASTE DISPOSAL

▲ **Ore., Oak Grove**—Oak Grove Sanitary Dist., Oak Grove, voted bonds Apr. 30, sewer program. **$1,200,000.**



Electric Wheels

by R. G. LeTOURNEAU

For thousands of years the wheel stayed pretty much the same as it was invented. All it had to do was roll. Power came from somewhere else, either pushing or pulling. Even as you and I roll around on wheels right now things are still pretty much the same. You might say that there's been less change in the wheel than in any other invention.

Now, in the past fifty years or so, the world has put power to its wheels. We don't use animals or people anymore to push or pull our vehicles; we use engines. But the engines do the same thing . . . they push or they pull.

The way things are now, you have an engine that produces power. And then you have to worry about transmitting that power to the wheels so the vehicle will move. That's why the machines have transmissions, driveshafts, differentials, belt drives, chain drives, and all kinds of drives. By hook or crook these systems get some of the engine power to the wheels. But by the time you take into account friction and mechanical inefficiency, a lot of power has gotten lost along the way. Basically, getting power to the wheels this way is still a lot like the idea of the pushcart or the horse and buggy . . . the power comes from somewhere else and all the wheels have to do is roll.

You'd get a lot more power from the wheels onto the road, where it counts, if you had the power right in the wheels. And that's what we've done with our LeTourneau Electric Wheels. On our vehicles, every wheel has a powerful motor built into the hub — every wheel drives.

A diesel-powered generator produces electricity and cables carry the current to the wheels. But the wheels do all the work . . . and they don't lose any power through transmissions, driveshafts and differentials.

Another thing about this kind of power is that it's always looking for a way to work. Sometimes you get a wheel on a slippery surface where there's hardly any traction. That's when the ordinary wheel spins. But with our Electric Wheels, the extra power that isn't being used shifts right over to the other wheels, and you keep right on going.

The same power that drives the wheels also brakes them. It's called dynamic or regenerative braking. All that means is when you're going downhill, for example, momentum causes the wheel motors to act as generators. A tremendous field of magnetic force holds you at the speed you want to go and with it you can brake right down to a stop. It's all done with electricity and you have no brake drums and linings to wear out. You never need a brake job.

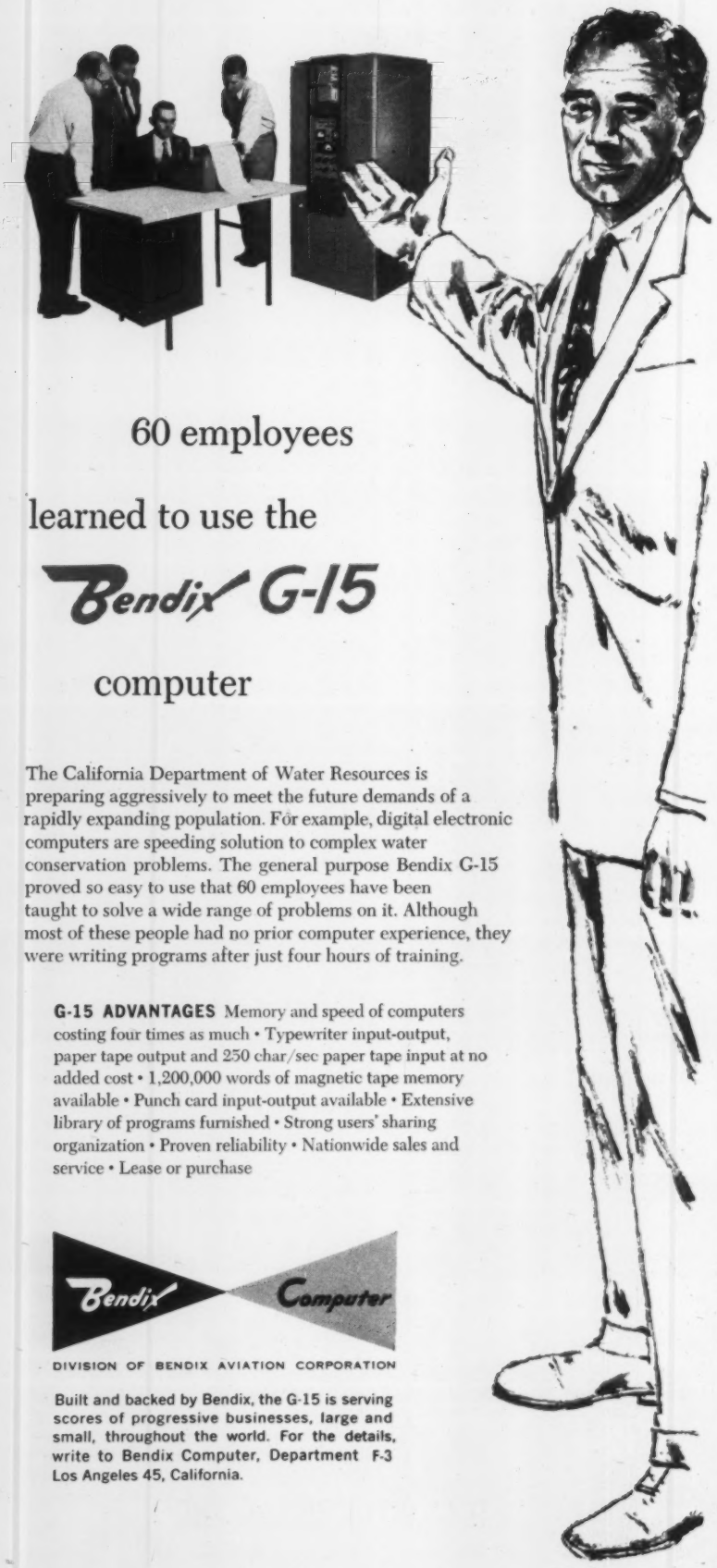
We're using Electric Wheels on all our mobile, heavy duty equipment for the logging industry and on our big, off-road transporters that can carry 100 tons or more. When you've seen them at work doing all sorts of big, tough jobs, you'll realize that power in the wheels is a big step forward. It's a step you can take. Start by telling us about your machinery problem — and let us put Electric Wheels to work for you.

R.G. LeTourneau

R.G. LETOURNEAU INC

2725 SOUTH MAC ARTHUR • LONGVIEW, TEXAS

R-108



60 employees

learned to use the

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computer

The California Department of Water Resources is preparing aggressively to meet the future demands of a rapidly expanding population. For example, digital electronic computers are speeding solution to complex water conservation problems. The general purpose Bendix G-15 proved so easy to use that 60 employees have been taught to solve a wide range of problems on it. Although most of these people had no prior computer experience, they were writing programs after just four hours of training.

G-15 ADVANTAGES Memory and speed of computers costing four times as much • Typewriter input-output, paper tape output and 250 char/sec paper tape input at no added cost • 1,200,000 words of magnetic tape memory available • Punch card input-output available • Extensive library of programs furnished • Strong users' sharing organization • Proven reliability • Nationwide sales and service • Lease or purchase

Bendix Computer

DIVISION OF BENDIX AVIATION CORPORATION

Built and backed by Bendix, the G-15 is serving scores of progressive businesses, large and small, throughout the world. For the details, write to Bendix Computer, Department F-3 Los Angeles 45, California.

Stevens & Thompson, 2234 SW 5th Ave., Portland, consult. engrs. CD 4/11.

▲ **Wash., Mountlake Terrace**—City, City Hall, $1,400,000 bond election June 17, sanitary sewers, 2 lift stations and treatment facilities. J. H. Reid & Assocs., Edmonds, consult. engrs. CD 11/16/56.

Que., Verdun—City, City Hall, various sewer installations, $124,000. CD 9/28/43.

BRIDGES

▲ **Calif., Bakersfield**—Bd. Suprvs., Kern Co., Bakersfield, $2,825,000 bond election June 3;
Beale Ave. overpass realignment and constr. of 4 lane portion of Truxton westward $2,720,786;
Truxton Ave. Overpass $678,820
Chester Ave. underpass $1,819,064. Kern Eng. Co., Moronet Bldg., consult. engr.

STREETS AND ROADS

▲ **SOUTH DAKOTA**—State Dpt. Hy., Pierre,
Brookings Co.—grading 8.2 mi. Minnesota Line west on SD 30, S 3181(2), $240,000.
Brown Co.—grading 12.9 mi. US 281 Aberdeen to Westport Rd., DF 045-7 (2), $500,000
grading 8 mi. US 281 north from Westport road, DF 045-7(3), $270,000.
Haakon and Stanley Counties—grading 28.5 mi., Billsburg to Kellers Corner, DF 028-3(1), $1,650,000.
Hamlin and Deuel Counties—bit. mat., Esteline east on SD 28, DF 028-3(1), DF 028-3(2), $140,000.
Hughes and Hyde Counties—bit. surf. mat. 29 mi. Stephan west on SD 34, DF 020-1(1), DF 020-2(1), $684,000.
Hyde Co.—grading 18 mi. Highmore south on SD 47, F037-5(1), $560,000.
Jerauld Co.—grading 10.288 mi. North County Line south on US 281, DF 045-4(1), $300,000.
Lyman and Gregory Counties—grading 10.369 mi. Iona to Dixon on SD 47, DF 037-2(1), & IF 037-1(2), $350,000.
McPherson Co.—grading 12 mi. SD 10 south of SD 47, F437-9(1), $300,000.
Meade and Perkins Counties—base repair and bit. mat. 17.8 mi. US 212 on SD 73, DF 027-6(1), $383,000.
Minnehaha and Lincoln Counties—bit. mat. 13.8 mi. US 16 to Lennox on SD 17, DS 3512 (1) & DF 3511-(1), $317,000.
Perkins Co.—bit. mat. 12.1 mi. US 12 on SD 73, DF 027-6(2), $258,000.
Roberts Co.—grading, 11.59 mi. Wilmot to Hartford Beach on SD 15, DS 2811-(1), $250,000.
grading, 6.19 mi., Hartford Beach south on SD 15, DS 2811-(2), $150,000.
Tripp Co.—bit. mat. 10.4 mi. South of Colone on US 183, DF 041-(1), $240,000.
Yankton Co.—grading 5.4 mi., SD 50 to Gavins Point, S 9401(1), $200,000.
grading 5 mi. US 281 west on SD 46, S 2153(1), $280,000.

AIRPORTS

▲† **Wyo., Cheyenne**—LIQUID OXYGEN PLANT—Dpt. Air Force, Camp Cooke Air Force Base, Calif., constr. liquid oxygen plant. $1,000,000. CD 1/6.

PUBLIC BUILDINGS

▲ **Calif., Long Beach**—SCHOOL—Long Beach Bd. Educ., 715 Locust Ave., plans by Kenneth S. Wing, 30 Linden Ave., frame, stucco, comp. and gravel roof, Hill Junior High School, $1,250,000. CD 11/8/54.

▲ **Colo., Fort Collins**—SCHOOL—School Dist. No. 5, Fort Collins, voted bonds Apr. 29, school addns. to Moore and Barton Schools, $1,325,000. Wm. B. Robb, 156 S. College Ave., archt.-engr. CD 3/21/58.

▲ **Conn., North Haven**—SCHOOL—Town, Town Hall, plans by Schilling & Goldbeck, 14 Trumbull St., New Haven, Junior High School, Bailey Rd. $1,000,000. CD 2/13.

▲ **Fla., Fort Lauderdale**—HOUSING—City Housing Auth., 1004 W. Broward Blvd., plans by R. G. Jahelka, 2020 NE 17 Court, 84-units, utilities and landscaping, Sunnyland Homes, NW 9th St. and 13th Ave., thru 14 Way, $1,000,000. Geo. L. Cadenhead, 412 SW 16th St., mech. engr. D. E. Britt, Assocs., 1766 Bay Rd., Miami Beach, struct. engrs. CD 8/29.

▲ **Fla., Miami**—SCHOOLS—Dade Co. Bd. Public Instruction, Joe Hall, supt., Admin. Bldg., 275 NW 2nd St., plans by Browne & Johnson, 2966 Coral Way, elementary school, Avocado site, Homestead, $350,000; plans by Weed-Johnson-Assocs., 550 Brickell Ave., Junior High School, Brownsville site, Miami, $1,000,000, plans by Edward T. Rempa, Jr., 153 Sevilla Ave., Coral Gables, elementary school, Naranja site, $350,000. CD 11/3/55.

▲ **Mich., Iron Mountain**—SCHOOL—Bd. Educ., Iron Mountain Schools, Iron Mountain, bond election June 9, Senior High School addn. $1,450,000.

▲ **N. J., Dumont**—SCHOOLS—Bd. Educ., Dumont, Junior High School, Linden Ave., Pershing and Charles Sts., elementary school in northwest area, and conversion of Washington School to administration bldg. $4,430,000.

▲ **N. J., Hawthorne**—SCHOOL—Bd. Educ., bond election June 10, Junior High School, Warburton and Bamford Sts. $1,700,000. Neil Greydanus, 157 Cedar Ave., archt. CD 8/30/56.

▲ **N. J., Newark**—SCHOOL—Bd. Educ., 31 Green St., high school and Junior High School in Roseville, $8,000,000.

▲ **N. J., Newark**—HOUSING—City of Newark Housing Auth., 57 Sussex St., plans by Robert Fava, 11 Hill St., 116 unit housing for the aged, Hayes Place,

144 unit old age housing at Stephen Crane Village, Stephen Crane Plaza, 240 unit old age housing at Kretchmer Homes, 71 Ludlow St.

▲ **N. J., Westfield**—SCHOOL—Bd. Educ. voted bonds Apr. 29, wing to existing high school, etc. $2,500,000, Epple & Seaman, 901 Broad St., Newark, archts. CD 4/16.

▲ **O., Cincinnati**—SCHOOL, etc.—Oak Hills School Dist., Race Rd., bond election June 17, school, addns. to present bldg., site imprvs. $1,500,000. George Schatz & Assoc., 309 Ludlow Ave., archts.

▲ **Pa., Brookville**—SCHOOL—Brookville Area Jt. School Dist., Brookville, Secondary (High) School, $2,500,000.

▲ **Pa., Carlisle**—COURTHOUSE—Comrs. Cumberland Co., Courthouse, constr. courthouse. $2,000,000.

▲ **Pa., New Oxford**—SCHOOL—Lower Adams Jt. School Dist., New Oxford, high school. $1,500,000.

▲ **Pa., Shoemakersville**—SCHOOL—Schuylkill Valley Jt. School Dist., Shoemakersville, high school. $2,000,000.

▲ **Pa., Tyrone**—SCHOOL—Tyrone Area Jt. School Dist., Tyrone, high school. $4,150,000.

▲ **Pa., Union City**—SCHOOLS—Union City Jt. School Dist., Union City, secondary school addn., $1,000,000; elementary school addn., $735,000.

▲ **S. C., Clemson**—ENGINEERING—Clemson College, Clemson, plans by Lockwood-Greene Engineers, Inc., consult. engr.-archt., Montgomery Bldg., Spartanburg, chemical engineering bldg. $1,750,000. Bids about Sept. 1. CD 4/23.

▲† **Tenn., Murfreesboro**—HOSPITAL—Veterans Admin., Munitions Bldg., Wash., D. C., plans by Edwin A. Keeble, Glen Echo Rd., Nashville, special service bldg. and addns. to two other bldgs. $1,000,000-$1,500,000. CD 3/13/56.

▲ **Tex., Ennis**—HOSPITAL—City, Davis Smith, hospital admin., municipal hospital, 800 W. Lampasas St., $1,000,000.

▲ **Utah, Salt Lake City**—THEATRE REPLICA—Utah State Bldg. Bd., State Capitol, plans by Harold Burton-Howard Barker, 270 S. 12th E., Old Salt Lake Theatre replica on University campus. $1,500,000. CD 1/8/57.

▲ **Wash., Colfax**—SCHOOL—School Bd. plans by G. M. Rasqui & Sons, Washington Trust Bldg., Spokane, 2 story, 89,000 sq. ft. high school, $1,250,000. Bids late in June. CD 3/21.

▲† **Wash., Fort Lewis**—HOUSING—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, plans by Jones, Lovegren, Helms & Jones, Republic Bldg., and Miller & Ahlson, 1410 Hubbel Place, Seattle, 856 units family housing. $14,000,000. CD 9/11/54.

▲ **Wis., Weyauwega**—HOSPITAL—Waupaca Co. plans by George Narovec, 520 E. Wisconsin Ave., Appleton, hospital. $1,000,000.

▲ **Que., St. Tite**—OLD PEOPLES' HOME—Provincial Health Dpt., Parliament Bldgs., Quebec City, plans by Robert A. Johansen, 205 120th St., Shawinigan S., 4 story, 52 x 186 ft. X-shaped, 4 wings, old peoples' home. $1,000,000. Arthur M. Johansen, 1335 rue des Erables, Shawinigan, consult. engr.

COMMERCIAL BUILDINGS

▲ **Conn., Wallingford**—HOUSING—Housatonic Development Corp., 2742 Main St., Stratford, 100 houses, "Brookside Park". $1,000,000.

▲ **Conn., West Hartford**—HOUSING—Suburban Development Corp., 29 Fowler Dr., 70 houses "Long Vue Acres" Elmfield St. $1,189,300.

▲ **Del., Wilmington**—OFFICE—Harry Rubenstein, Bank of Delaware, 9th and Market Sts., office bldg. $1,000,000.

▲ **Fla., Hollywood**—MOTEL, etc.—Aristocrat Motel, Inc., c/o Melvin Grossman, archt., 324 Mercantile Bldg., Miami Beach, 3 and 4 story, 200 x 400 ft. RIC. 175-rooms, aristocrat motel and swimming pool, (Beaverly Beach), $1,000,000. Henry J. Nelson, 1101 Lincoln Rd., Miami Beach, mech. engr. Sloan Eng. & Assocs., 1644 NE 123rd St. N., Miami Beach, struct. engrs.

▲ **Ind., Indianapolis**—OFFICE—Meridian Mutual Insurance Co., 2955 N. Meridian St., plans by Lennox, Matthews, Simmons & Ford, 3949 Meadows Dr., 4 story, 113 x 130 ft. rein.-con. masonry, steel office bldg. $1,000,000.

▲ **O., Cleveland**—MEDICAL CENTER—Cedar 28th Co., c/o Nathan Simon, 935 Leader Bldg., Zone 14, plans by Irving D. Robinson, 4900 Euclid Ave., Zone 3, 5 story, aluminum and glass medical center, with attached garage, between Carnegie and Cedar Aves. at 28th St., $2,500,000.

▲ **O., Mantua**—HOUSING—Edward H. Bockelman, Mantua, 150 homes, on 105-acre site, northwest of here. $1,000,000.

▲ **R. I., Barrington**—COLLEGE—Providence—Barrington Bible College, 100 State St., Providence, plans by Laland, Larsen, Bradley & Hibbard, 711 Boylston St., Boston, Mass., 2 dormitories, $1,120,000.

▲ **Tex., Houston**—HOSPITAL—Baylor University College of Medicine, 1200 M. D. Anderson Blvd., Houston, teaching hospital, to be in area Texas Medical Center. $1,500,000. CD 4/11/52.

▲ **Tex., Houston**—MOTEL—Flamingo Hotels Chain, 12501 Van Buren, Phoenix, Ariz., 150-room luxury motel, Main St. $1,500,000. Expect start work this summer.

▲ **Tex., Houston**—APARTMENT—Owners, c/o Neuhaus & Taylor, archts. 2710 Danville St., 120-unit apartment, San Felipe Rd. $1,500,000.

▲ **Wis., Superior**—SHOPPING CENTER—Seaway Plaza Co., Plymouth Bldg., Minneapolis, Minn., shopping center, 1st unit supermarket. $2,000,000.

▲ **Alta., Calgary**—OFFICE—Farmers & Merchants Trust Co., Calgary, plans by Abugov & Sunderland, 909 15th St. SW., 6 story, steel, concrete office bldg., containing 60,000 sq. ft., with fdns. for carrying 12 story structure, 7th Ave. and 7th St. W. $1,000,000.

▲ **Ont., Peterborough** — HOTEL — Empress Hotel, 131 Charlotte St., hotel reconstruction. $1,000,000.

▲ **Ont., Toronto**—APARTMENT—Modern Constr. Co., 1862 Bathurst St., Zone 10, 366-suite apartment, East Drive near Scarlett Rd. Over $1,000,000.

▲ **Que., Ste. Anne de la Pocatiere**—COLLEGE—College de Ste. Anne de la Pocatiere, Ste. Anne de la Pocatiere, college addn. $1,000,000.

▲ **Que., St. Pacome**—SCHOOL—Congregation des Soeurs de Notre Dame, St. Pacome, Normal School. $1,000,000.

INDUSTRIAL BUILDINGS

▲ **Mo., Springfield**—PLANT—Dayton Rubber Co., 2342 W. Riverview, 1 story, 175,000 sq. ft. brick, concrete mechanical rubber goods mfg. plant, 62 acre site. $2,500,000.

▲ **N. J., Elizabeth**—FOOD DISTRIBUTION CENTER—Wakefern Food Corp., 715 South Ave. E., Cranford, food distribution center, on 18-acre tract, York St. $1,500,000.

▲† **N. M., Albuquerque**—LABORATORY, etc.—Atomic Energy Comn., Box 5400, plans by The Norman Eng. Co., 321 S. Robertson Blvd., Beverly Hills, Calif., 3 story, 63,000 sq. ft. laboratory, $1,242,750; plans by Holabird, Root and Burgee, 180 N. Wabash St., Chicago, Ill., Climatic Chamber and Hi-Temperature Test Facility, $613,000.

▲ **Tex., Houston**—PLANT—Texophyl Corp., c/o E. A. Allen, Boling, processing plant (to manufacture porphyrins, and by-products, from alfalfa, wheat, etc.) 12 acre site, $2,750,000; lighting, $75,000; area and car-parking center, $80,000.

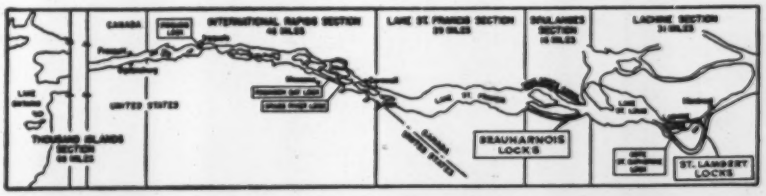
▲ **Utah, Salt Lake City**—WAREHOUSE, etc.—Stevell-Paterson Hardware Co., 126 S.W. Temple St., plans by Stack David Winburn, Beason Bldg., 17,000 sq. ft. warehouse and office, 6th West between 13th and 17th South. $1,000,000.

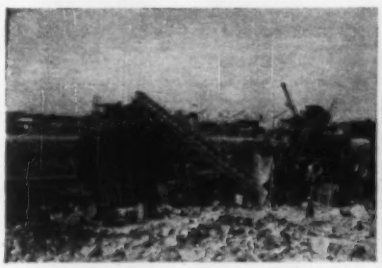
UNCLASSIFIED

▲ **Ky., Covington**—SPORTS AND COMMUNITY CENTER—City plans by Betz & Bankemper, Scott St., sports and community center, north of 12th St. $1,000,000.

▲ **Alberta**—OIL PIPE LINE—Federated Pipe Lines Ltd., (Home Oil Co. Ltd.), 304-6th Ave. S. W., Calgary, 130 mi. 10 in. oil pipe line, with one pumping station from Swan Hills Fields to Edmonton. $6,500,000. CD 4/16.

Dumpcretes work on two lock jobs at St. Lawrence Seaway





McNamara-Piggott-Peacock Ltd. used five Dumpcretes to handle 405,000 cu. yds. of concrete on the St. Lambert Lock and Approaches at Montreal, Quebec. Lock will be approximately 765 ft. long, 80 ft. wide and 30 ft. deep. At Beauharnois, Quebec, another lock is under construction, with concrete handled by Dumpcretes, by United Waterways Constructors (Angus Robertson-Pentagon-Foundation).

SEND FOR NEW FIELD REPORT ON THIS JOB

Dumpcretes—Job Proved by the Nation's Top Concrete Men

MAXON CONSTRUCTION COMPANY, INC.
Manufacturing Division—39
2600 Far Hills Building, Dayton 19, Ohio
Please send me new Dumpcrete Field Report.

NAME_____
TITLE_____
FIRM_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
June 2 Connecticut
STREETS AND ROADS
May 27 Massachusetts May 28 Rhode Island
June 2 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲† **J. R. Cianchette**, Main St., Pittsfield, Me., LB (A) $6,814,844, est. $7,863,222 (B) $6,815,982, Est. $7,860,070, missile facility at Presque Isle Air Force Base, ENG-19-016-58-132, PRESQUE ISLE, ME. U. S. Eng., 150 Causeway St., Boston, Mass. Bids May 14. CD 4/18.

BUILDINGS—LB & CA

▲† **Davison Constr. Co., Inc.**, 1306A Elm St., Manchester, N. H., CA Est. $8,382,000, Capehart HOUSING, Dow Air Force Base, Inv. 17-601-58-46, BANGOR, ME. Procurement Officer, Dow Air Force Base, Bangor, Me. Bids Apr. 10. CD 4/15, under LB.

▲ **Walter Kidde Constructors, Inc.**, 140 Cedar St., New York, N.Y., CA $5,500,000, MANUFACTURING PLANT and OFFICE, 1 story, 360,000 sq. ft. (330,000 sq. ft. for mfg.) office ext. walls of colored porcelain enamel panels and aluminum window wall units, face brick and steel sash topped with aluminum rib sidings exterior of factory sect., railway siding for 10 cars, EAST HARTFORD, CONN. Fuller Brush Co., 3580 Main St., Hartford, Conn. Awarded May 9, CD 5/14.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
May 27 Maryland May 29 Pennsylvania
June 5 New York
STREETS AND ROADS
May 27 Maryland May 29 Pennsylvania
June 5 New York

BUILDINGS—BA

▲ **Pa., Wilkes-Barre**—HOME FOR INFIRM—BA 5/28—Schmitt & Foster, archts., 198 N. Main St., Home for Infirm for Luzerne County Institution Dist. Courthouse, Wilkes-Barre, $4,000,000. Plans deposit $150. Quentin Bowers, 2nd National Bank Bldg., Wilkes-Barre, engr.

▲ **N. Y., New York**—HOUSING—BA 6/10—New York City Housing Auth., 299 Broadway, Zone 7, general constr., heating and ventilating, electric work and plumbing (A) Rosedale Houses (Proj. No. NYC-31) located in area bounded generally by Rosedale Ave., Bruckner Blvd. Taylor Ave. and line generally parallel to Story Ave. separating City portion from Federal portion of project as more fully indicated in drawing, Bronx Boro; (B) for James Monroe Houses (Proj. No. NY-5-36) in area bounded generally by Taylor Ave., Lafayette Ave., Soundview Ave., Rosedale Ave. and line generally parallel to Story Ave., Bronx Boro. Plans deposit $75. CD 4/20/56.

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—Dpt. P. Wks., Gov. Alfred E. Smith State Office Bldg., Albany, Bids opened 5/15,

N. Y.—**Lane Construction Corp.**, 965 E. Main St., Meriden, Conn., LB $3,114,497, est. $4,199,000 (11 bidders) 9 in. c. conc. 219 mi. b. conc. 0.11 mi., misc. work 0.03 mi. incl. 4 highway grade separations, compressed beams 2345 ft., 231 ft., 131.5 ft., 135.5 ft., pier footings for future grade separation, Interstate Rte. 502, Sect. 2, Contr. 1 (Latham to Mohawk River) FISH 58-3, Proj. I-1119 (16), FAI Proj. Albany Co.;

N. Y.—**Alexander Constr. Co., Inc.**, 714 Edgemont Ave., Chester, Pa., LB $376,900, est. $540,000 (14 bidders) b. conc. 14.42 mi. Ticonderoga-Crown Point, Pt. 1, S.J. 891, Ticonderoga-Crown Point, Pt. 2, S.H. 1176, Crown Point-Port Henry, S.H. 841, Rtes. 8, 9N, 22. RC 58-36, Essex Co.;

N. Y.—**S. Scullen Co.**, Box 362, Waterford, N. Y., LB $2,042,658, est. $2,104,000 (3 bidders) b. conc. 9.49 mi. incl. Bridge No. 1, prestressed concrete beam, 3 spans, 70 ft. each, Bridge No. 2, rein.-con. closed box 25.5 ft., Rte. 28N, Adirondack Lair-Newcomb, Pt. 2, S.H. 756, Newcomb-Long Lake, Pt. 1, S.H. 5188, FARC 58-30, Proj. S-210 (3), Essex Co.;

N. Y.—**Dosch-King Co., Inc.**, Troy Hills Rd., Whippany, N. J., LB $228,996, est. $331,000 (8 bidders) subsealing cement concrete pavt. 18.68 mi. seven various highways in Dist. No. 2, Rtes. 5, 20, 12, RC 58-22, Herkimer, Madison and Oneida Counties;

N. Y.—**Lizza & Sons, Inc.**, P. O. Box 148, Oyster Bay, N. Y., LB $556,670, est. $696,000 (5 bidders) b. conc. 3 mi. loop Parkway (Lido Blvd. at Long Beach to Meadowbrook State Parkway) LP 58-1, Nassau Co.;

N. Y.—**Hogeboom & Campfield, Inc.**, Seneca Turnpike, New Hartford, N. Y., LB $980,992, est. $1,030,000 (3 bidders) b. conc. Ty. La 0.53 mi., widen and resurf. 1.39 mi. incl. concrete slab bridge, 3 spans 22 ft. each, Rte. 69, Whitesboro-Yorkville, Pt. 1, S.H. 8510, FARC 58-31, Proj. F-693 (5), Oneida Co.;

N. Y.—**Hamagrael Constr. Corp.**, 90 State St., Albany, N. Y., LB $171,569, est. $204,000 (4 bidders) b. conc. 0.39 mi. incl. Bridge No., prestressed conc. 2 spans 49.8 ft. each. West Sand Lake-Poestenkill-Cropseyville, Pt. 3 (County Road) FASS 58-6, Proj. S-486 (2), in Rensselaer Co.;

N. Y.—**Putnam-Hawley Constr. Co., Inc.**, Potsdam, N. Y., LB $307,254, est. $328,000 (3 bidders) 9 in. c. conc. 0.29 mi. incl. Bridge No. 1 compressed I-beam, 3 spans 240 ft. Br. No. 2, I-beam, single span 64 ft. Rte. 56, 56A, Norwood Norfolk, S.H. 967, Norfolk-Raymondville, S.H. 1587, FARC 58-32. Proj. S-507 (1), in St. Lawrence Co.;

N. Y.—**Putnam-Hawley Constr. Co., Inc.**, Potsdam, N. Y. LB $492,046, est. $523,000 (2 bidders) b. conc. 1.32 mi., incl. Bridge No. 1, prestressed concrete 4 spans 75 ft. each, Rte. 37, FARC 58-26, Massena-Helena, Pt. 2, S.H. 1265, FARC 58-26, Proj. S-367 (2), St. Lawrence Co.;

N. Y.—**Paragon Engr. Co.**, 23 Elm St., Oneonta, N. Y. LB $280,681, est. $346,000 (16 bidders) b. conc. 0.78 mi. incl. Bridge No. 2, prestressed concrete single span 72 ft. Grand George-Breakabeen Pt. 4, S.H. 8070, Middleburg-Breakabeen, S.H. 5577, Rte. 30, FARC 58-34, Proj. S-459 (3), Schoharie Co.;

N. Y.—**D & T Franzese Bros. Inc.**, 114 N. Madison Ave., Watkins Glen, N. Y., LB $248,895, est. $293,000 (5 bidders) top course bit. mac. type 1, 1.6 mi. Montour Falls-Townsend, C.R. No. 398, FASS 58-12, Proj. S-446 (1), Schuyler Co.;

N. Y.—**Daniel G. Lanni Co., Inc.**, 251 Bonnie Brae Ave., Rochester, N. Y., LB $409,676, est. $547,000 (5 bidders) b. conc. 0.31 mi. incl. viaduct and bridge repair truss and girders 840 ft. Rte. 21, Hornell City, west Main St., FAC 58-4, Proj. F 589 (5), Steuben Co.;

N. Y.—**Lizza & Sons, Inc.**, P. O. Box 148, Oyster Bay, N. Y., LB $404,466, est. $511,000 (6 bidders) b. conc. 0.97 mi. Rte. 27A, Bayshore Brookhaven Town line, S.H. 5301, FARC 58-27; Proj. S-442 (2), Suffolk Co.;

N. Y.—**Serafini Constr. Co., Inc.**, P. O. Box 265, Binghamton, N. Y., LB $676,740.49, est. $680,000 (1 bidder) b. conc. Type 2A, 1.35 mi. City of Ithaca Arterial, Meadow St., Seneca St., Green St., FAC 58-3, Proj. U-427 (9), in Tompkins Co.;

N. Y.—**John Arborio, Inc.**, West Cedar St., Poughkeepsie, N. Y., LB $1,727,202, est. $2,152,000 (3 bidders) 9 in. c. conc. 5.1 mi. incl. Bridge No. 1, composite W.F. beam 85 ft. span, Rte. 299, Highland-New Paltz, S.H. 1526, FARC-58-33, Proj. F-1109 (1), Ulster Co.;

N. Y.—**Potter-DeWitt Corp.**, Pavilion, N. Y., LB $137,951, est. $182,000 (10 bidders) b. conc. Type 1A, 0.54 mi., Rte. 14, Lyons-Sodus Point. Pts. 2&3, S.H. 1060, FARC 58-25, Proj. F-1145 (1), in Wayne Co. CD 4/21.

▲ **Merritt-Chapman & Scott Corp.**, 260 Madison Ave., New York, N. Y., CA $65,962,254, Contr. N-5, constr. waterways work, Section No. 1 and appurtenant works, Niagara Power Plant in Niagara Falls, Spec. PA-N-23005, NEW YORK. Power Auth. of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids May 6. CD 5/8, under LB.

▲ **PENNSYLVANIA**—Pa. Hy. & Bridge Auth. 506 North Office Bldg., Harrisburg, Bids opened 5/9,

Pa.—**James D. Morrissey, Inc.**, 9119 Frankford Ave., Phila. 14, Pa. LB $5,164,309 (12 bidders) 27,140 ft. divided hy., c. conc. 24 ft. wide each side divisor, 3 bridges, 6 grade separations, T. R. 611 Section Stroudsburg by-pass (Proj. 817-1) Delaware Water Gap, East Stroudsburg, and Stroudsburg Boros, Smithfield Twp. Monroe Co.;

Pa.—**Allegheny Contracting Industries, Inc.**, 801 Bingham St., Pittsburgh, Pa. LB $4,388,813 constr. 26,824 ft. divided hy. rein.-conc. 24 ft. wide each side medial area, 7 grade separations section Erie Thruway (Proj. 804-1) Summit, Greene and Millcreek Twps. FAI, Erie Co.;

Pa.—**Middlecreek Constr. Co.**, Winfield, Pa. LB $1,244,778 (7 bidders) 51,315 ft. course aggreg. base with bit. surf. variable in width T. R. 16 (Proj. 710-1) Greencastle and Mercersburg Boros, Montgomery, Peters and Anteim Twps. Franklin Co. CD 4/22.

▲† **Piracci Constr. Co., Inc.**, 2552 Woodbrook Ave., Baltimore 17, Md. CA $3,446,470 Base Bid, 3 story, rein.-con. depot operations bldg., Olmsted Air Force Base, ENG-18-020-58-14, MIDDLETOWN, PA. U. S. Eng., 24th St. and Maryland Ave., Baltimore, Md. Bids Apr. 30. CD 5/5, under LB.

BUILDINGS—LB & CA

▲ **Adolphus Flowers**, c/o Herman H. York, archt., 90-04-161st St., Jamaica, N. Y., Owner Builds, $2,700,000, 136 HOUSES, on 77 acre tract on Great River Rd. south Montauk Hy., GREAT RIVER, N. Y.

▲† **Terminal Constr. Corp.**, P. O. Box 175, Wood-Ridge, N. J., CA $11,574,252, 702 unit Capehart HOUSING and utilities ENG-36-109-58-5, FORT DIX, N. J., U. S. Eng., 2635 Abbottsford Rd., Phila., Pa., CD 2/11, under LB.

▲ **L & U Constr. Co. (Paul Uslan)**, 160 Wentz Ave., Springfield, N. J. Own Forces. $4,500,000, 315 HOUSES, off Lincoln Hy, near Middlebush to be known as Franklin-Somerset Homes, FRANKLIN TWP. (MIDDLEBUSH P.O.), N. J. Isadore Naftall, 312 High St., Newark, N. J., archt.

▲ **Radice Constr. Co.**, 10 Franklin Ave., White Plains, N. Y. Own Forces. $3,500,000, two 12 story, 168 family APARTMENTS, Forest Hills Ave., NEWARK, N. J. George J. Sole, 347 East 52 St., New York, N. Y., archt.

▲ **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa. LB $1,759,000 STUDENT UNION BLDG., PHILA., PA. La Salee College 20th St. and Olney Ave., Phila., Pa. Bids May 1. CD 4/23.

▲ **Morris Altshuler**, 1601 Packer Ave., Phila., Pa. Separate Contracts. $3,500,000, RESIDENTIAL DEVELOPMENT (300) 17th St. and Packer Ave., PHILA., PA. Harry Berg, 1411 Walnut St., Phila., Pa., archt.

▲† **McCloskey & Co.**, 1620 W. Thompson St., Phila., Pa., CA $6,666,000, excavation, foundation piles, and other items for foundation for addnl. OFFICE BLDG. for U. S. House of Representatives, WASH., D. C. Office of Architect of Capitol, U. S. Govt., U. S. Capitol, Wash., D. C. Bids Mar. 26, Awarded May 10. CD 3/28, under LB.

▲† **Terminal Constr. Co.**, State Hy. 17 and Monachie Ave., Wood-Ridge, N. J. and **Frouge Constr. Co., Inc.**, 141 North Ave., Bridgeport, Conn., LB $7,619,000, general contract 500-unit Capehart HOUSING, Dover Air Force Base, ENG. 11-626-58-4 CH, DOVER, DEL. Procurement Officer, Base Theatre, Dover Air Force Base, Dover, Del. Bids May 1, CD 4/15.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
June 24 Florida
STREETS AND ROADS
June 5 Kentucky

BUILDINGS—LB & CA

▲† **H. L. Coble Constr. Co.**, 1705 Battleground Ave., Greensboro, N. C., CA $12,829,300, constr. 849 units, Armed Services HOUSING, Marine Corps Air Station, NBy 10716, FHA Proj. 053-81023-MG-3, CHERRY POINT, N. C. Dist. P. Wks. Office, Fifth Naval Dist., U. S. Naval Base, Bldg. No. 26, Norfolk, Va. Bids Mar. 25, Edwards, McKimmon & Elheride, Raleigh, N. C., archts. CD 3/31, under LB.

▲ **J. A. Jones Constr. Co.**, 3443 N. Market, Shreveport, La., CA $3,594,900, Royal Orleans HOTEL, Royal St. Louis and Chartres St., NEW ORLEANS, LA. Royal St. Louis, Inc., 338 Baronne St., New Orleans, La. Bids Apr. 21. CD 4/18.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
May 27 Indiana

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., Columbus,

O.—**Peter Kiewit Sons' Co. & Condon-Cunningham, Inc.**, 15806 Lorain Ave., Cleveland, O., CA $4,595,159, est. $4,660,660, Type T-71 and structures 5.518 mi. S.R. 1, Sect. 8.54, AC1-1105 (18), Washington Twp., Richland Co.;

O.—**Soda & Luscher Constr. Co.**, Niles, O., CA $770,610, est. $806,800, Type T-35 and structures, 5.412 mi. S.R. 45, Sects. (15.88-18-58) F-155 (2) Bristol and Bloomfield Twps., Trumbull Co. Bids Apr. 29. CD 5/8, under LB.

BUILDINGS—LB & CA

▲† **Kaplan & Son, Ltd.**, 100 Huguenot Ave., Englewood, N. J. with **The Ferber Co.**, 16 Johnson Ave., Hackensack, N. J., LB $6,336,000, (15 bidders) 521 unit, HOUSING, Lockbourne Air Force Base, ENG.-3-617-58-52, COLUMBUS, O. Air Force, Defense Dpt., Pentagon, Arlington, Va. Bids May 7. CD 4/21.

▲ **George A. Fuller Constr. Co.**, 597 Madison Ave., New York, N. Y., CA Est. $2,500,000, 14 story, 120 x 120 ft. curtain wall constr., featuring glass and complete air conditioning OFFICE BLDG., TOLEDO, O. Libby-Owens-Ford Glass Co., 608 Madison St., Toledo, O. CD 4/12/57.

▲† **Sumner Sollitt Co.**, 307 North Michigan Ave., Chicago, Ill., LB $19,857,000 Base Bid. (3 bidders) constr. addnl. BUILDINGS and utilities Veterans Administration N. P. Hospital, DOWNEY, ILL. Veterans Admin., Munitions Bldg., Wash., D. C. Bids May 13. CD 3/13.

▲† **Chell & Anderson, Inc.**, 5425 N. Kedzie Ave., Chicago, Ill., CA $3,302,000, constr. three 3 story BARRACKS bldgs., water steam distr. sys., concrete curbs, gutters, bit. paving at Great Lakes Naval Training Center, Spec. 12662/57, GREAT LAKES, ILL. Ninth Naval Dist., Great Lakes, Ill. Bids Apr. 22. CD 5/12, under LB.

▲ **Rust Engineering Co.**, 575 6 Ave., Pittsburgh, Pa., CA $11,000,000 300,000 ton new bar steel MILL, 88 acre tract, LEMONT, ILL. Ceco Steel Products Co., 5601 W. 26th St., Cicero, Ill.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

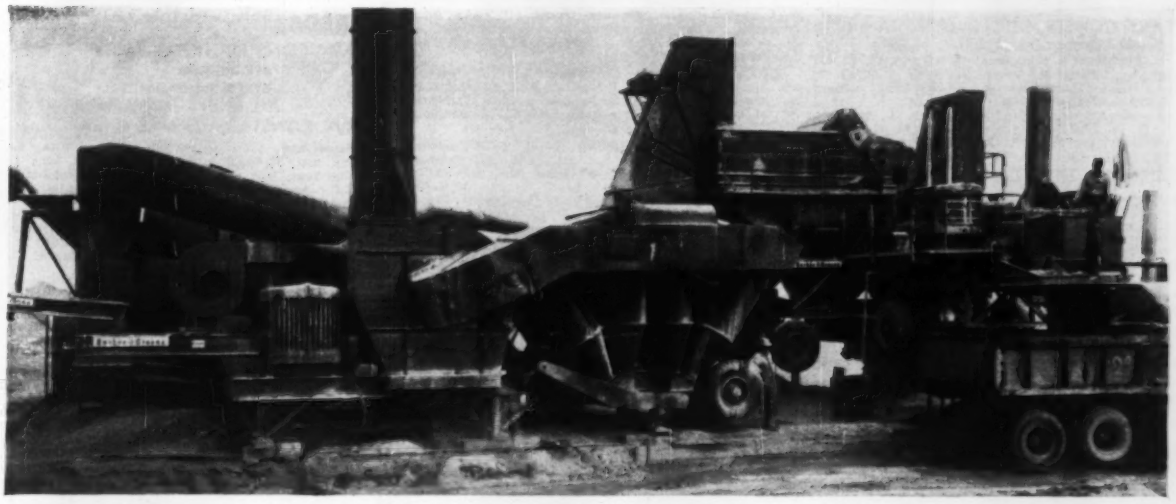
STATE HIGHWAY LETTINGS
BRIDGES
May 27 Iowa June 2, 3 Oklahoma
STREETS AND ROADS
May 27 Iowa June 2, 3 Oklahoma

BUILDINGS—BA

▲† **Tex., Fort Hood**—HOUSING—BA 6/17—U. S. Eng., Box 1600, Fort Worth, 500 Capehart housing units ENG-41-443-58-65. $7,500,000. CD 5/8.

(Continued on page 94)

Machines of tomorrow ready to cut your costs today



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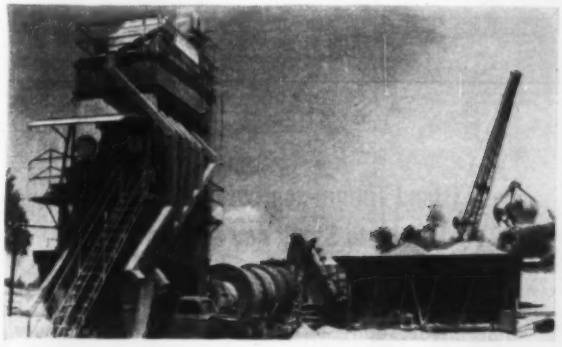

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The new Model 879-B Finisher is establishing even higher standards of speed, accuracy and economy. Latest improvements include greater receiving hopper capacity, new transmission for faster operating and travel speeds, higher-speed tamper for faster laying speeds, new crawlers which further decrease maintenance costs, and new power unit with 20% more power for pushing even bigger trucks and handling even steeper grades. Automatic leveling and independent tamper combine to produce a level surface that will stay level under rolling and traffic.

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Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

(Continued from page 92)

▲ **Tex., Waco**—HOUSING UNITS—BA 6/17—Housing Auth. of Waco, Box 987, Dwell Naylor Exec., 250 housing units (contained in 45 bldgs.) Tex. 10-4. $2,750,000. Plans deposit $50. Wm. N. MacPherson & Edwin F. Redondo, Assoc. Archts., 114 Princess Pass, San Antonio, archts. R. Marvin Shipman, 202 W. Olmos, San Antonio, and Wm. K. Hall, Melba Bldg., Dallas, engrs. CD 4/4.

HEAVY CONSTRUCTION—LB & CA

▲ **SOUTH DAKOTA**—State Dpt Hys., Pierre, S. D.
G. H. Lindekugel & Sons, Mitchell, S.D. CA **$2,771,901** grading, subbase, etc 15.334 mi. Projs. I 093-2 (1) and F 016-5 (1) Lincoln Co.; CA **$694,618,** c. conc. 2.308 mi. Proj. F 030 4 (1) Beadle Co.;
S. D.—**Harris Constr. Co.,** 109½ S. Main St., Aberdeen, S. D. CA **$808,045,** c. conc. etc. 15.334 mi. Projs. I 093-2 (1) and F 016-5 (1) Lincoln Co. Grand total $4,274,564. Bids Mar. 18. CD 3/25, under LB.

BUILDINGS—LB & CA

▲ **Kraus-Anderson, Inc.,** 501 South Eighth St., Minneapolis, Minn., LB **$3,188,100** (4 bidders), general contract, incl. all work, Glenwood Housing "Floyd Olson HOMES", Olson Hy. and Lyndale Ave. North, MINNEAPOLIS, MINN. Minneapolis Housing and Redevelopment Authority, R. Jorvig, ex. dir., Minneapolis, Minn. Bids May 8. CD 4/16.
▲ **Kansas City Housing Auth.,** Forrest D. Byers, chn., 1220 Independence Ave., Kansas City, Mo., rejected bids Mar. 6, Pennway Plaza Housing Proj., 250 units in 42 BUILDINGS, KANSAS CITY, MO. LB **$3,081,-349.** Will re-advertise. CD 3/12, under LB.
▲ **E. L. Fausett & C. V. Barnes,** c/o Fausett Enterprises, Little Rock, Ark. Separate Contracts. **$10,-000,000** HOUSING DEVELOPMENT, incl. about 400 Colonial-type brick residences, water and sewer facilities, walks, driveways, streets, etc. on 112-acre tract bounded by Hayes, Markham, Mississippi Sts. and Kanis Rd., LITTLE ROCK, ARK.
▲† **C. H. Leavell & Co. and Dan R. Ponder,** (joint venture), 327 Morgan Ave., El Paso, Tex., CA **$6,498,700,** 400 units Capehart HOUSING, Holloman Air Force Base, ENG-29-600-58-92, ALAMOGORDO, N. M. Directorate of Procurement, Base Theatre, Holloman Air Force Base, Alamogordo, N. M. Bids Apr. 22, CD 5/12, under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES
June 4, 11 California

STREETS AND ROADS
June 4, 11, 12, 18, 19 California

BUILDINGS—BA

▲ **Wash., Seattle**—LIBRARY—BA 6/3—Seattle Library Bd., 1631 7 Ave., 5 story, bsmnt., 157,600 sq. ft. rein.-con. library, $3,500,000. Plans deposit $100. Bindon & Wright, archts., Hoge Bldg., and Decker, Christenson & Kitchin, Assocs., 1411 4th Ave. Bldg., archts. CD 12/18/56.
▲† **Idaho, Mountain Home**—HOUSING—BA 6/5—Procurement Officer, Mountain Home Air Force Base, constr. 270 unit Capehart housing development at Mountain Home Air Force Base, $4,000,000, CD 3/12, under Airports.
▲† **Calif., Sacramento**—HOUSING—BA 6/10—Directorate of Procurement & Production, Bldg. 10, McClellan Air Force Base, 540 family housing units (Capehart) at McClellan Air Force Base, SMPPCA. $8,640,000. CD 9/19, under Airports.
▲† **Wash., Tacoma**—HOUSING—BA 6/10—Procurement Office, McChord Air Force Base, 600 unit Capehart family housing, McChord Air Force Base, Inv. 58-72, $9,296,062, Plans deposit $200. Bassetti & Morse, McClure & Adkison, and R. W. Beck & Assocs., Tower Bldg., Seattle, Zone 1, archts. CD 4/18/56.
▲ **Ore., Portland**—HOSPITAL—BA 6/17—State Bd. Control, Salem, constr. first phase of Dammasch General Mental Hospital, near Wilsonville, $6,330,000. Stanton, Boles, Maguire & Church, Concord Bldg., archts. CD 9/4.

HEAVY CONSTRUCTION—LB & CA

▲ **Utah Constr. Co.,** 100 Bush St., San Francisco, Calif. LB Approx. **$12,500,000,** power tunnel at Mammoth Pool Dam, 60 mi. N.W. of Fresno, CALIFORNIA. Southern California Edison Co., 601 W. 5th St., Los Angeles, Calif. Bids May 9. CD 10/22.
▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles,
Peter Kiewit Sons Co., 345 Kieways Ave., Arcadia, Calif. CA **$3,410,310** viaduct section over Los Angeles River and adjacent railroad yards 1,250 ft. long up to 60 ft. high for 6 lanes of Santa Monica Freeway, VII-L.A.-173, 4, L.A., Los Angeles Co. Bids May 1, awarded May 13. CD 5/6, under LB.
▲† **Griffith Co.,** 1060 S. Broadway, Los Angeles, Calif. LB **$13,515,000** (11 bidders) Base Bid, 1st increment of Naval Air Station; two 13,500 ft. runways, taxiways, sewage utilities etc. LE MOORE, CALIF. 12th Naval Dist., P. Wks. Office, San Bruno, Calif. Bids May 9. CD 4/11.

BUILDINGS—LB & CA

▲† **G. J. Cozza,** Fidelity Bldg., Spokane, Wash., LB **$3,368,237,** (7 bidders), 228 units Capehart HOUSING, Geiger Air Force Base, SPOKANE, WASH., Procurement Officer, Geiger Air Force Base, Wash., Bids May 7, CD 4/15.
▲ **Dinwiddie Constr. Co.,** 210 Crocker Bldg., San Francisco, Calif. CA **$3,332,300** 5 story, bsmnt., Type I constr. COURTHOUSE, EUREKA, CALIF. Humboldt County, c/o Clerk, 11th and H Sts., Eureka, Calif. Bids Apr. 30, awarded May 8. CD 5/6, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS
May 28, June 11 Ontario

HEAVY CONSTRUCTION—LB & CA

▲ **Mannix Ltd.,** 332-7th Ave. S.W., Calgary, Alta., CA Total est. **$8,480,000,** branch line Optic Lake to Chisel Lake, Man., clearing, grading, etc., installation of 2 culverts and timber bridges in two sections (a) from Optic Lake for distance of approx. 26 mi. easterly and (b) from Chisel Lake for distance of 26 mi. westerly, Optic Lake, MANITOBA. Canadian National Railways, A. V. Johnson, ch. engr. 355-360 McGill St., Winnipeg, Man. Bids Apr. 14, Awarded May 5, CD 4/1/58.

BUILDINGS—LB & CA

▲ **Curran Hall Ltd.,** 1201 Bloor St. W., Toronto, Ont., Owner Builds, **$2,500,000,** RESIDENTIAL sub-division, Botany Hill Rd., Orton Rd., Madras Cres., Hapley Dr., Plover Rd., Croswell Dr., TORONTO, ONT. Proctor & Redfern, 75 Eglinton Ave. E., Toronto, Ont., engrs.

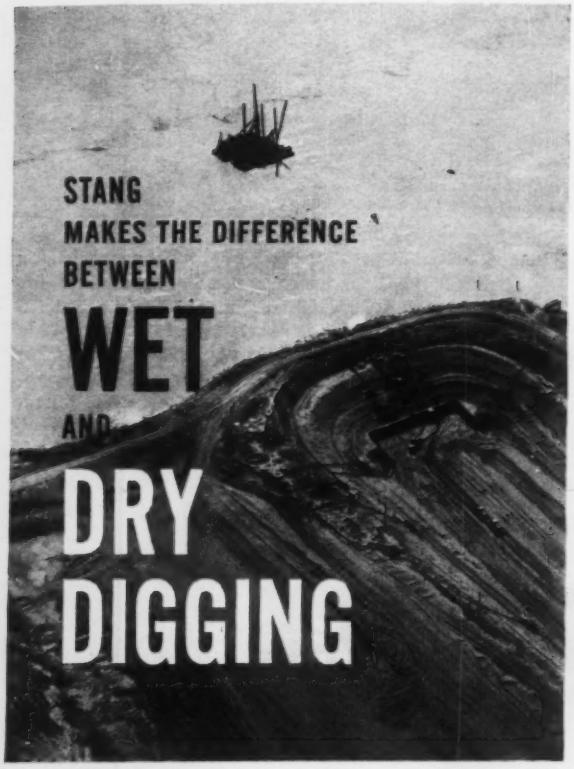
ALASKA

▲† **Burgess Constr. Co.,** Box 652, Fairbanks, Alaska. CA **$3,363,727,** 4 story, 78,000 sq. ft. rein.-con. COMPOSITE BLDG. for University of Alaska, Proj. 50-A-298, COLLEGE, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. CD 4/30, under LB.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **M. W. Kellogg Co.,** 711 3 Ave., New York, N. Y., U.S.A., and subsidiary, **Compania Kellogg de Venezuela,** CA **$28,000,000,** 40,000 bbl. per day REFINERY, El Palito, near Puerto Cabello, VENEZUELA. Socony Mobil de Venezuela, sub Socony Mobil Oil Co., 150 E. 42nd St., New York, N. Y., U.S.A. CD 3/3



Deas Island Tunnel approaches DUG IN THE DRY—thanks to Stang dewatering

On any project, you can depend on Stang to start the job right—IN THE DRY. Remember, the responsible handling of water, in any situation, is Stang's sole business. Don't fight water, and lose time and money doing it. For the practical, economical answer to **all** your water problems, call on **water-handling specialists** . . . call on STANG!

CONTRACTORS FOR THE APPROACHES:
Peter Kiewit Sons Co. of Canada,
Raymond International Co. and
B. C. Bridge & Dredging Co.

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TACOMA, WASHINGTON
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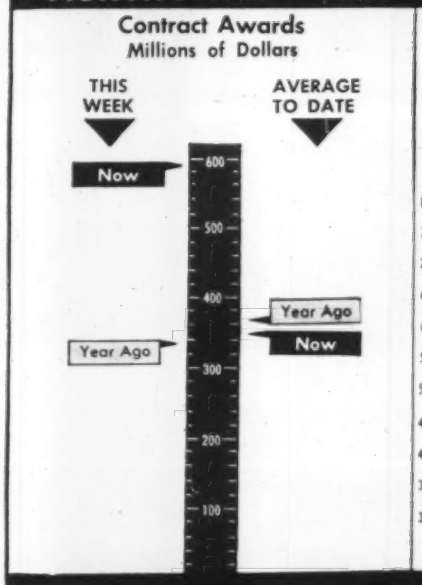
TULSA, OKLAHOMA
4026 South Urbana Street
Telephone: Riverside 2-6929

Construction Scoreboard

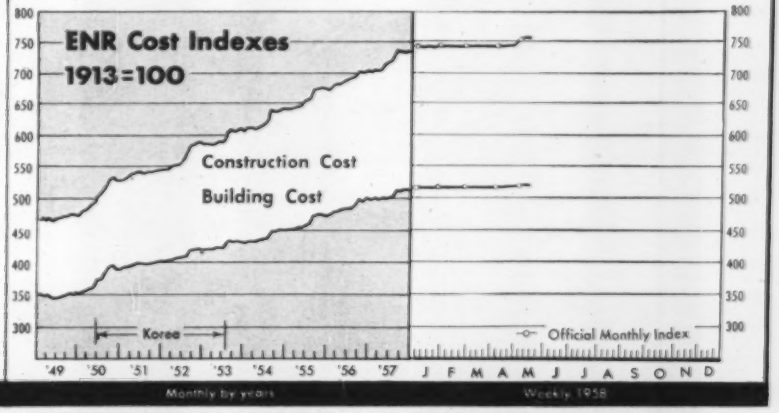
ACTIVITY THIS WEEK



COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of May 15 1958	% Change from Apr. 17 1958	% Change from May 16 1957
Construction Cost	755.34	+1.14	+5.1
Building Cost	519.41	+0.32	+3.2

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

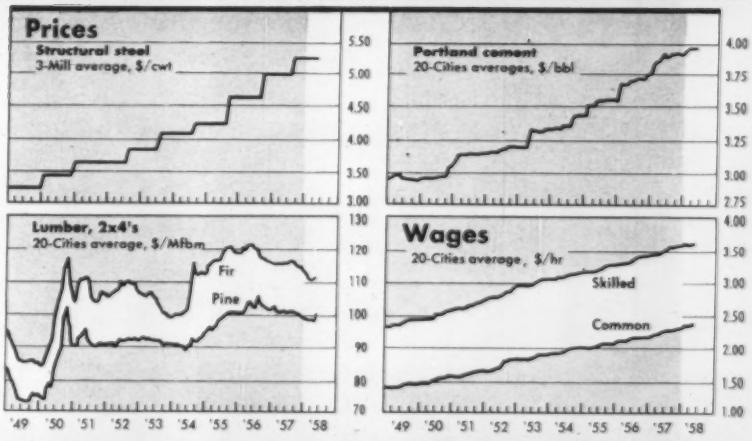


AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 21 wks 1958 millions	Chge '57-'58 %
All Heavy Constr.	$588.1	$7,304.3	−4
Private	241.2	3,383.0	−6
Public	346.9	3,921.3	−2
State & Municipal	206.9	2,996.0	+7
Federal	140.0	925.3	−24
By Type of Work			
Public			
Waterworks	6.0	115.6	−34
Sewerage	12.6	223.2	+24
Bridges*	7.8	203.8	−25
Highways	64.3	1,159.9	+1
Earthwork, Waterways	74.6	388.3	−27
Buildings, Excl. Housing	99.4	1,025.2	+16
Housing	52.2	427.9	+48
Unclassified	30.1	385.6	−27
Private			
Mass Housing	160.1	1,531.6	+23
Commercial	28.6	843.6	+18
Industrial	34.5	807.8	−43
Unclassified	17.9	191.8	−7

* Includes private bridges.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.



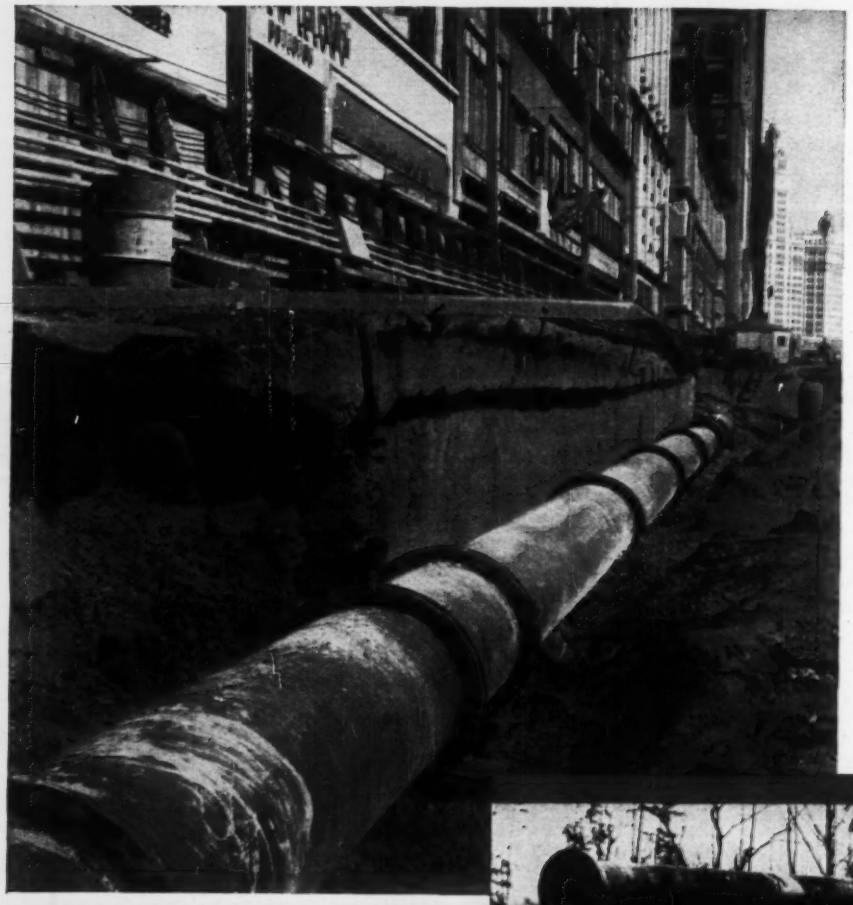
NEW CAPITAL FOR CONSTRUCTION

	Week of May 15	Cum. 20 wks 1958 millions	Chge '57-'58 %
Corporate Securities	$51.4	$2,270.4	−2
State and Municipal:			
All Except Housing	131.7	2,813.8	+25
Housing	...	20.3	−51
Federal Loans	2.8	73.8	−12
Federal Aid	...	....	−100
Total Nonfederal	$185.8	$5,178.3	+40
Federal Appropriations:			
Projects in U. S.	...	$603.2	...
Outside U. S.	...	....	−100
Total New Capital	$185.8	$5,781.5	+17

ENR COST INDEXES IN 22 CITIES, 1913 = 100

City	Construction Cost May 1958	Construction Cost Percent Change from last Month	Construction Cost Percent Change from last Year	Building Cost May 1958	Building Cost Percent Change from last Month	Building Cost Percent Change from last Year
Atlanta	558	0	+5.7	456	0	+3.1
Baltimore	677	0	+5.3	524	0	+4.9
Birmingham	593	0	+6.8	477	0	+4.3
Boston	792	+3.7	+5.9	525	+0.6	+1.9
Chicago	837	+0.3	+5.8	529	+0.4	+4.5
Cincinnati	746	+0.1	+4.6	502	+0.2	+2.7
Cleveland	849	+0.3	−0.8	515	+0.5	−1.3
Dallas	553	+1.0	+5.3	459	+1.7	+4.6
Denver	725	0	+3.2	523	0	+2.6
Detroit	854	+0.2	+5.5	547	+0.4	+3.8
Kansas City	762	0	+3.7	527	0	+4.9
Los Angeles	814	+5.3	+11.3	511	+0.7	+3.0
Minneapolis	803	0	+6.7	537	0	+3.0
New Orleans	585	0	+2.3	475	0	+1.7
New York	913	+0.4	+7.0	596	+0.5	+3.0
Philadelphia	775	0	−0.6	561	0	+0.2
Pittsburgh	804	0	+5.5	569	0	+5.2
St. Louis	840	+3.5	+6.5	558	+1.6	+3.8
San Francisco	762	0	+5.7	507	0	+4.4
Seattle	789	+1.2	+5.4	471	+0.9	+3.3
U. S.—20 Cities' average	**752**	**+0.8**	**+5.0**	**519**	**+0.4**	**+3.1**
Montreal	585	+0.3	+0.2	447	+0.3	−0.3
Toronto	607	0	−0.6	470	0	+0.3

WHATEVER THE SITE



Chicago, Ill.—Installing 24" Mechanical Joint cast iron pipe for water line rerouted due to construction of underground garage beneath Michigan Avenue.

Hickory, N. C.—High beam strength of Cast Iron Pipe makes it particularly adaptable to this type of construction on outfall sewer.

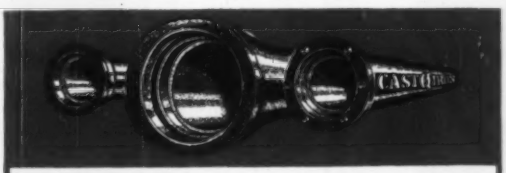
MODERNIZED **cast iron**

OR SITUATION...

there's a Cast Iron Pipe for the job

WHAT'S YOUR PROBLEM?

let us help you solve it...



6 reasons why Cast Iron Pipe is #1 choice of U. S. A.

1. **HIGH FLOW CAPACITY...** Cement lined cast iron pipe and fittings will not tuberculate . . . delivers a full flow for the life of the pipe.
2. **LONG LIFE...** 42 North American cities are still using cast iron water mains laid 100 years and more ago. Hundreds more have passed the 50 year mark.
3. **BEAM STRENGTH...** Cast Iron Pipe is inherently tough . . . stands up under heavy traffic load, soil displacement and disturbance.
4. **EXTERNAL LOAD RESISTANCE...** 6" Class 150 Pipe withstands a crushing load of 17,900 pounds per foot . . . nearly 9 tons.
5. **CORROSION RESISTANCE...** Cast Iron Pipe effectively resists corrosion . . . vital factor in its long life and dependability.
6. **TIGHT JOINTS...** A full range of leak-proof, low cost, easy-to-assemble joints for pipe and fittings are available for all conditions.

No telling where you may need to lay pipe . . .

Hilly country or flat, city street or rural lane, under superhighways, railroads or rivers.

But whatever the site or situation you *can* be sure of this: with cast iron pipe properly installed there'll be no trouble on or after the job.

Dependability, long life are built into every rugged length of cast iron pipe. Dependability *proved*, not merely promised.

THE MAN WHO CHOOSES CAST IRON PIPE TODAY WON'T PAY FOR IT AGAIN TOMORROW!

CAST IRON

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pipe FOR MODERN WATER WORKS

Housing Bill Hearings Start

"Regular" housing legislation introduced in Senate as emergency law's good effects appear assured

Congress is rolling ahead with its second round of housing legislation, buoyed by reports from around the country (ENR May 15, p. 23) that show a sharp upturn in homebuilding has resulted from its emergency housing law passed earlier this year.

The Senate was holding hearings this week on the so-called "regular" housing bill that includes new help for college housing, urban renewal, public housing, new FHA insurance authority and cooperative housing. The House will take up a companion bill next month.

The upsurge in housing stimulated government housing officials to appeal to Congress last week for additional authority to insure mortgages. Housing Chief Albert Cole told the Senate Housing Subcommittee that the fast rise in applications for FHA mortgage insurance would exhaust the agency's present authority before June 15.

Housing officials had been forced to make a sharp upward revision of their own estimates of the insurance authority that FHA would need, Mr. Cole told the Senate housing group. FHA now wants Congress to vote increases of $4 billion each year for five years, instead of the $3 billion a year that the Administration asked for March 4, when its 1958 housing program was introduced in Congress.

Even more important, Administrator Cole requested the members of Senator Sparkman's subcommittee to start action at once on a special joint resolution that would make the first $4 billion available within the next couple of weeks. The Housing Administrator said that to wait for passage of regular housing legislation would cause a shutdown of FHA mortgage insurance by mid-June.

Ample insurance authority to keep FHA operating is assured of quick enactment, quite possibly this week. Congress may not make the full $4 billion for fiscal 1959 available in advance of July 1, but it will grant at least $1 billion immediately to assure no curtailment of FHA activity during June 1.

Crucial Administration proposals are basically the same as were put forward first in the President's January budget message and later in the Administration bill. Congress won't accept the White House plan to pass to the cities a greater share of the cost of assembling, clearing and preparing urban redevelopment sites for sale to private developers. But the Administration proposal may head off a Congressional drive to increase the federal share of this write-down cost to more than the present two-thirds.

Congress, too, will probably turn down the President's plan to authorize no additional public housing units for fiscal 1959, but, instead, permit use next year of units previously authorized but not yet started. Senator Sparkman is pushing an additional authorization of 35,000 units for fiscal 1959, the same number as were authorized two years ago for 1957 and for 1958.

Congress almost certainly will vote larger amounts for urban renewal and for college housing than the Administration wants. For urban renewal, as an example, Senator Sparkman proposes a $3.5 billion 10 year program at $350 million a year. The White House wants a six year $1.3 billion program, with the cities contributing more than they do now.

On two points, Congress will probably go along with the Administration: Increasing the ceiling on FHA-insured mortgage loans to $30,000 from the present $20,000, and stepping up the maximum value of FHA and VA mortgages that FNMA may buy under its normal secondary market operation from the current $15,000 to $20,000.

Shift to High Gear

Two states accelerate public works spending

Tennessee and Pennsylvania have thrown their anti-recession spending programs into high gear. Gov. Frank Clement of Tennessee expects that $183.6 million in federal, state and local government public works projects will be started in 1958. This does not include highway work, where another $120 million of spending is planned. In Pennsylvania, Gov. George M. Leader announced that the state has accelerated by anywhere from weeks to a year some $256 million in public works.

The $183.6 million, Governor Clement said, consists of "projects on which construction will begin this year and which are not dependent on future Congressional appropriations or special state sources." Funds for them already are available.

Another group of projects, totaling $63.2 million, he said, could move into construction before the end of the year if Congress votes certain additional sums or if other revenue sources become available.

The project figures were developed from a survey by the state planning commission and were only preliminary, the governor explained. He expects the $183.6 million to provide 12,000 or more jobs.

• **Pressure for more jobs**—Meanwhile, Governor Clement is putting pressure behind planning of further jobs. Municipalities are being told that state agencies will rapidly process their applications for advance planning of local public works. The governor said he has asked President Eisenhower to expedite federal programs for depressed areas of the state. Finally, Governor Clement said he is asking private firms with expansion plans to accelerate their construction schedules.

Between April 1 and July 1, local governments in the state will have put $37.9 million of new projects into construction this year, the governor continued. The state will get $32.6 million worth under way, and the federal government $5 million.

Between July 1 and January 1, 1959, local government projects worth $5.3 million are scheduled to begin construction. The state meanwhile will move $65.3 million, and the federal government $10 million, to the construction stage.

• **Speed in Pennsylvania**—In Pennsylvania, the governor's job-acceleration campaign has affected many types of projects—hospitals, highways, urban renewal, public housing and schools. One result of his drive is that the department of highways already has distributed to municipalities 90%, or $27 million, of the subsidy paid out yearly from the motor license fund. Ordinarily only 50% would have been disbursed by now. The remaining $3 million will go out about October 1. The earlier distribution means that municipalities have most of their roadbuilding funds in time for the construction season.

The agencies with major programs are as follows: highway department, $57.7 million; department of public instruction, $72.7 million; commerce department, $27.5 million; general state authority, $41.6 million; welfare department, $22.4 million; and federal public housing, $17.5 million.

New Taxes Stay

Boggs holds construction hostage as he vetoes bill canceling income tax hike

New bonds will not be sold for Delaware construction programs if the General Assembly overrides Gov. Caleb J. Boggs' veto of a bill repealing a $6 million boost in personal income taxes. His authority to stop issuing bonds to finance construction of highways, schools and other public works was the big stick that the governor waved as he told the legislature to allow his veto to stand.

But the legislators were not there to receive the veto. They had adjourned until June 2, and there was talk that the repeal bill was only Democratic strategy to let the governor's Republican administration take the responsibility for a rise in income taxes—political poison in any year, perhaps sure death in this one.

After the governor's action, the Delaware budget generally was back where it was in December. Then the legislators approved $21 million in new taxes—including the $6 million personal income tax increase—in an effort to offset the $27 million deficit expected by June 30, 1959, the end of the next fiscal year. They also agreed (ENR Jan. 9, 1958, p. 100) to cut expenditures between now and then by $6 million. As an earnest move in this direction, the legislators presented for consideration a Democrat-sponsored general appropriations bill providing for cuts in authorized spending totaling at least $5 million.

Tough political decisions become even tougher in a recession period, however, and the Assembly, after many futile sessions, decided in April to postpone its decision on spending cuts. In June, the legislators reasoned, the influx of personal and corporate income taxes will show them just how much political poison it is necessary to take.

Maine Legislature Votes New Funds, Cuts Others

Maine's legislature, in a special session, guaranteed a $4.5 million highway construction program for the state in 1958. It allocated $600,000 of matching funds, which, with a $900,000 advance on future federal allocations, entitles the state to $3 million in federal funds for both the interstate and secondary roads. The legislature took the $600,000 from the proceeds of a $24 million bond issue that was approved last year.

But the state was forced to revise and cut back its catalog of projects financed entirely by state funds in order to avoid a $1.5 million deficit. The deficit was expected as a result of voter rejection of an increase in highway user fees last March. Some $650,000 in projects was saved from the ax, however, when the Highway Commission managed to transfer them to the enlarged federal program. This left only $750,000 of construction to be deferred.

The Republican-dominated legislature killed three of Democratic Gov. Edmund S. Muskie's proposals for expanding unemployment compensation. The last of the three was a request to authorize participation in any plan Congress devises for extending the benefit period (now 26 weeks). As it stands, Maine can participate only if federal funds are provided as an outright grant.

The state has 30,000 workers receiving compensation and 14,000 more who are without work but are not covered by the law. The construction industry may do its bit for unemployment, it was brought out at a legislative hearing. Then a spokesman for the Associated General Contractors of Maine estimated that the industry would hire 20,000 more workers by August in connection with the $273 million in construction he said was under contract, scheduled or proposed for 1958 (ENR Apr. 3, p. 110).

McKee, Raymond to Join On Selected Foreign Jobs

Arthur G. McKee & Co., Cleveland, and Raymond International, Inc., New York City, have agreed to a working association for the design, engineering and construction of new petroleum refineries and chemical plants for overseas clients.

Last week's joint announcement by H. E. Widdell, president of McKee, and George F. Ferris, president of Raymond, said that under the working association both firms will coordinate their know-how and services on contracts in Europe, Asia, Africa, Australia, New Zealand and South America.

The two companies will perform complete projects on a turnkey basis. The announcement added that each company still will retain the right to do business individually in the specified territories, "should it not be to the mutual advantage of the two companies to work together on any particular project."

Ceco Plans $11 Million Midwest Structural Mill

Ceco Steel Production Corp. will erect an $11 million structural steel mill at Lemont, Ill., 27 miles southwest of Chicago. The firm will operate the plant through a new wholly-owned subsidiary, Lemont Manufacturing Corp. Ceco will handle fabrication of the entire 120,000 tons of billet-sized ingots turned out each year. The mill is expected to be operating in the fall of 1959 and at capacity by 1960.

A variety of products will be made, including small structural shapes such as channels and angles, rounds from ⅜ in. to 2¼ in. in diameter, all sizes of reinforcing bars for concrete, and special sections used in architectural building applications.

Ned A. Ochiltree, Ceco president, said the expansion would provide the company with one-third to one-half of the 300,000 tons of steel it purchases every year. The rest will continue to be bought from Ceco's usual sources. Mr. Ochiltree added that the entire production of the mill will be taken by the parent company and that none of the output will be sold to other fabricators.

Engineer and contractor for the Lemont plant is the Rust Engineering Co., Pittsburgh.

M. W. Kellogg Co. Expands Into Other Building Fields

M. W. Kellogg Co. of New York City has established a new Division of Industrial Projects in an expansion move that will put the company into a broader field of designing and constructing for all types of process industries. The company, a subsidiary of Pullman, Inc., formerly concentrated its activities in the petroleum and petrochemical industries. Within this field, the company placed emphasis on those areas where it had developed a process position.

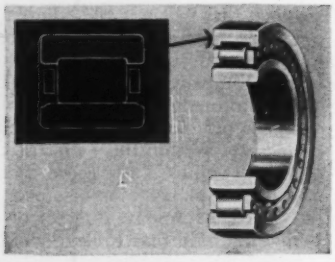
J. M. McAneny, director of the new division, said that Kellogg will back the move with an advertising and sales campaign.

He explained that the company will push its organizational advantage of being able to offer its coordinated contracting services; engineering, procurement and construction.

He added that the economy presented to clients through the use of one company to develop and construct a complete operation was illustrated when Kellogg won the contract for the $30 million Kennecott Refining Corp. electrolytic copper refinery in Baltimore.

(*B&F continued on page 101*)

Loggers' "weight-lifter" tests bearing stamina!



TWO-LIP RACE INCREASES RIGIDITY

Two parallel shoulders made integral with the outer race, as shown in gray above, increase rigidity and durability —keep rollers in proper alignment. Precision-ground rollers and races give quieter, smoother operation.

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BOWER ROLLER BEARINGS

Business Briefs . . .

• **Nuclear power expenditures**—The electric power industry will spend approximately $250 million on nuclear power projects by the end of 1959, according to J. W. McAfee, head of the Edison Electric Institute. The industry plans overall outlays for nuclear power of $500 million. Meanwhile, the federal government is making its own plans for A-power expenditures (page 22).

• **Adding cement facilities**—Ideal Cement Co., Denver, will construct a $2 million distribution and storage terminal on a seven acre tract along the Columbia River near Vancouver, Wash. The firm entered the Pacific Northwest market last year with the purchase of Northwestern Portland Cement Co. Ideal now operates 15 cement plants in 12 states.

• **Cement firm earnings off**—American Cement Corp. reported that net earnings for 1957 totaled $8.4 million compared to $10.2 million in 1956. The company was formed through the merger of Hercules Cement Corp., Philadelphia; Peerless Cement Corp., Detroit; and Riverside Cement Co., Los Angeles.

• **Cement company earnings down**—Medusa Portland Cement Co., Cleveland, had first quarter net earnings of $284,084 as compared with $368,428 in the first quarter of 1957. Ellery Sedgwick Jr., president, said that first quarter profits represent a small proportion of profits for a full year and that earnings for this year will probably top those of 1957.

• **Steel production rate**—Steel industry operations for the full year of 1958 will average 62% of capacity, according to Avery C. Adams, president of Jones & Laughlin Steel Corp. He also said that although the company's new orders are coming in at a low rate, there are signs of modest improvements which indicates an ending of the inventory liquidation period.

• **Sales of "Big Steel" decline**—Roger M. Blough, chairman of United States Steel Corp., reported that sales during this year's first quarter totaled $800 million compared wih $1.2 billion in 1957's first quarter.

• **Business for Wisconsin**—Army Engineers will award nearly $28 million in contracts during the next two months for construction in Wisconsin, according to Senator Proxmire. Contracts will be awarded for nine military projects before June 30.

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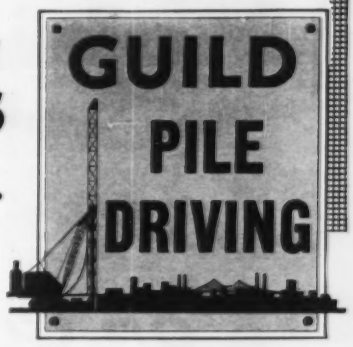

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COBI Piles are more economical. They are driven in intimate contact with the soil, and their uniform diameter allows a greater displacement of soil which in many cases results in shorter piles for a given load capacity.

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The mandrel and shell are driven in one operation. Shells and mandrels can be furnished in whatever lengths necessary to develop carrying capacity without need of driving test piles.

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The permanent pile casing can be visually inspected the full length after driving and prior to placing concrete.

STRAIGHTNESS

COBI Piles are driven with a heavy steel mandrel of uniform cross section. The mandrel expands in the shell locking the two parts into one integrated unit. This very rigid type mandrel assures straighter piles.

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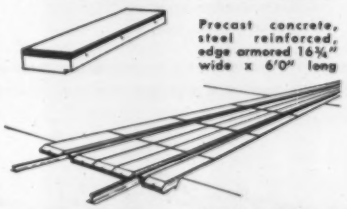

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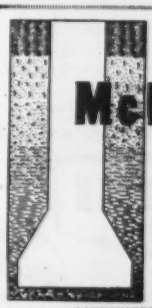

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AGC Speaks Out on Legislation

Urges tighter restrictions on boycotts, jurisdictional disputes, featherbedding; supports right-to-work laws

A 7,000 member general contractor association last week recommended to a skittish Congress passage of a number of legislative proposals that long have been a disruptive wedge between construction management and labor.

Recommendations included a tightening rather than a relaxing of the secondary boycott and mandatory injunction provisions of the Taft-Hartley Act, extension of the anti-trust laws to organized labor, outlawing of recognition and organizational picketing, and adoption of right-to-work laws at state or federal levels.

The proposals were made by the Associated General Contractors of America, Inc. They were presented to the Senate Labor Committee's subcommittee (headed by Sen. John Kennedy) by Frank J. Rooney, a Miami contractor who is a past president of AGC and now chairman of its labor committee.

• **Current problems**—In touching upon most of the present labor law proposals now before Congress, Mr. Rooney put particular emphasis on four of the industry's most controversial problems: secondary boycotts, jurisdictional disputes, featherbedding and performance of construction work by members of industrial unions.

The AGC, he said, is "unalterably opposed" to legalizing secondary boycotts at construction sites. He charged that this would amount to "discriminatory legislation," make contractors "second-class citizens," and inflict heavy financial loss and perhaps bankruptcy on many small employers. Besides banning the boycott, the AGC would broaden the definition of boycott, Mr. Rooney said, to include hot cargo agreements and direct pressure on employers as well as on individual employees.

The AGC position on the other issues were outlined like this:

• Jurisdictional disputes—which involve the question of which craft is entitled to what work—are the "most objectionable form of union fratricide" and are as "objectionable and indefensible" as secondary boycotts. (They are now forbidden by the Taft-Hartley Act but the National Labor Relations Board often has difficulty in stopping them.) To assure compliance with NLRB decisions, violations should be subject to a mandatory injunction—but only after the industry's National Joint Board for the Settlement of Jurisdictional Disputes has failed in its settlement efforts.

• Efforts of building trades' President Richard Gray to induce local unions to eliminate wasteful work practices are to be commended and "such a voluntary program should be encouraged." The present provisions of the law on featherbedding and restrictive practices could be improved to strengthen "the hands of responsible labor leaders" in this direction or to take over where their efforts fail.

• An existing practice among industrial unions of restricting the right of their employers to give work to outside contractors violates the "basic American principle of freedom of contract." It should be prevented by law—by making it an unfair labor practice and an unlawful restraint of trade.

• **Other issues**—In commenting upon a host of other issues, including elimination of the no-man's land between state and federal jurisdiction over labor matters, Mr. Rooney gave the AGC's general endorsement to current efforts to protect union funds and health, welfare and pension plans and to insure union democracy.

He recommended, however, a rigid ban on use of union funds for political purposes and urged that fund reports be filed with the Securities and Exchange Commission or an independent agency rather than with the Labor Department. He also warned against going overboard on union democracy to the extent that responsible union officers would lose disciplinary control over union members with respect to enforcement of such contractual obligations as exist under labor contracts and the Joint Board agreement.

• **Joint committee**—The three recommendations that emerged last year from the industry's Special Joint Committee on Taft-Hartley Amendments again were endorsed by the AGC. They are: Certification of construction unions without a prior NLRB election where there is a history of collective bargaining; recognition of association bargaining and the right to take concerted action in the face of whipsawing by unions; legalization of employer contributions to apprentice training funds.

In contrast to the program recommended by the AGC, the AFL-CIO building trades unions are actively supporting only two of the proposed Taft-Hartley Act amendments: legalization of the pre-hire contract and approval of apprenticeship contributions. The unions are bitterly opposed to the boycott and injunction proposals and are pushing for legislation that would legalize construction boycotts (which President Eisenhower has recommended) and that would eliminate the mandatory injunction completely.

The subcommittee before which Mr. Rooney appeared is expected to issue its legislative recommendations early in June. As of last week, it looked as if its proposals would not go much beyond fund control and union democracy.

Total Employment Steady As Construction Improves

Construction workers fared better than any other group of non-farm employees in the nation's employment picture last month.

According to the U.S. Departments of Labor and Commerce, employment in contract construction scored a better than usual gain and climbed to 2,748,000 in April, representing an increase of 210,000 over the March level. But the number of workers employed, however, was 158,000 below the total of a year ago.

The April increase, together with a sharp rise in service industry employment more than offset a drop of 270,000 in manufacturing employment during the month.

Net result is that non-farm employment, as computed by the government, showed a slight increase in April and reached 50,232,000. Hourly earnings for all industries remained constant at $2.11; the factory workweek fell to a postwar low of 38.3 hours; weekly earnings dropped 64 cents to $80.81.

Total unemployment—5.1 million—showed no significant change but the number of jobless covered by state unemployment insurance moved up by 100,000 to 3.4 million.

The number of workers who have been idle for 15 weeks or longer also increased and reached a postwar high of 1.9 million. An estimated 600,000 of these have been without work for six months or more.

At the same time, the government reported, the rate at which state jobless benefits were exhausted showed an increase. April exhaustions were 230,000 compared with 191,000 in March.

(*Labor continued on page 106*)

announcing the new Manitowoc model 3600 3 yard shovel

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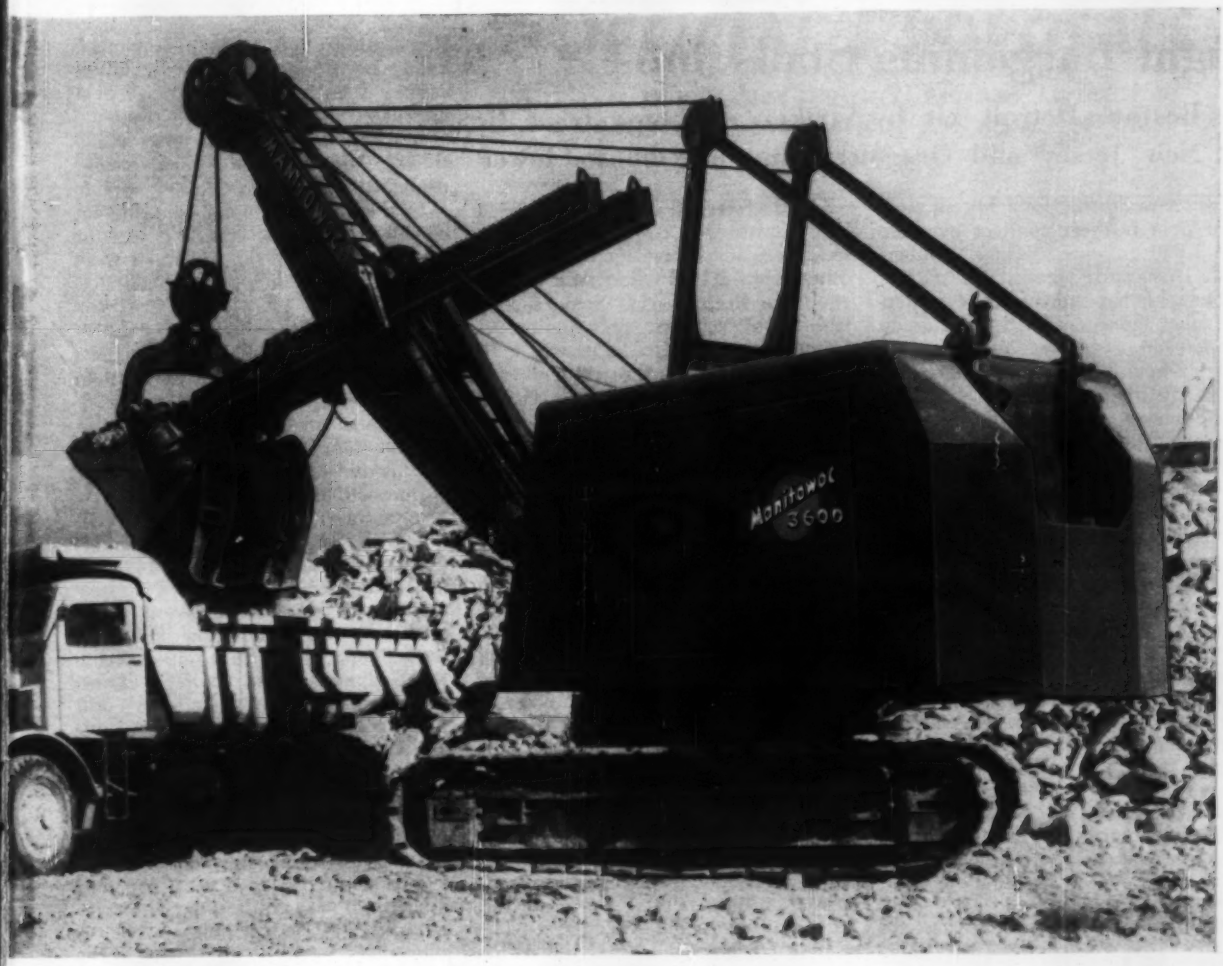
Want more digging power, more cycle speed, more output — more *profit* even from low bid jobs? Then you'll want all the facts about the big, *new* Manitowoc 3-yd. Model 3600 shovel. Here is a tough, fast unit with all the modern, big output features you need to make money in today's highly competitive market.

The new 3-yard 3600 is scientifically engineered to match modern haul units. New, high-sided hauling units require a shovel with the correct shipper shaft positioning . . . the exact dipper pitch and shape to provide higher reach and cleaner dumps. Result — faster work cycles and no loading bottlenecks.

The new 3-yard 3600 delivers full power to the dipper. Simple design eliminates power loss in the gear train . . . increases cycle speed. Here's a big machine in the high capacity class which offers the speed and responsiveness of small capacity rigs. And for smoother power transfer the torque converter system includes a "governor" to maintain rigid control of the infinite variety of power ratios. Line pull and line speed factors are balanced against load resistance, resulting in smooth, powerful operation and long machine life.

The new 3-yard 3600 makes hard jobs easy. Responsive air controls let your shovel runner perform at top efficiency all day without fatigue. Smooth-acting clutches and positive-action brakes respond instantly to the operator's touch even on the toughest jobs.



The new 3-yard 3600 stays on the job longer. Tough, internally reinforced, box-section dipper sticks; a massive shipper shaft; a tubular, alloy boom; a manganese dipper and many other long-life features keep the 3600 working longer with fewer service delays.

The new 3-yard 3600 is quickly convertible to crane, clamshell or dragline operation. You get a smooth-lifting, 65 ton capacity crane — a big-yardage, long-reach 3-yd. dragline. Simple boom connections make front end conversion in the field fast and easy.

See your Manitowoc distributor now for more facts on the new 3-yard 3600. There are dozens of other profitable features to help you land more contracts. Get more information *today!*

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Tight Bargaining Stalls Jobs

Boston, Detroit hit by strikes; lockouts tried in New Jersey and Oregon; some pay boosts lower

A three-week strike for a 50 cent wage boost in a two-year contract by more than 1,000 carpenters against members of the Associated General Contractors in Memphis has ended in a new three-year labor agreement that grants union members an overall wage increase of 50 cents an hour.

The situation is not unique, at least in the construction industry, despite a government report that strikes in industry generally hit a postwar low during the first quarter of this year. Last week, construction in many areas remained bogged down and there was little indication that contractors would have much success in holding the line on wages.

In two areas—Oregon and New Jersey—contractors resorted to lockouts or shutdowns in an effort to strengthen their positions and in Cleveland the negotiating contractors used a newspaper ad to air their views on high wage demands during a recession and on the need for orderly and sincere group bargaining. But generally the situation was one of normal deadlocks with or without the intervention of meditation officials.

• **Lockouts**—In Oregon all heavy (including highway) construction was tied up for 11 days when the Heavy Construction Division of the Portland AGC locked out striking laborers on the theory that a strike against one association member is a strike against all.

Members of the Oregon District Council of Laborers, who asked originally for a 30 cent wage boost in a one-year contract, last week settled for an increase of 50 cents spread over three years. They will receive a 20 cent wage increase retroactive to March 1, plus a 15 cent boost each succeeding year. Contract grants "reasonable" travel pay.

Lockout action also was taken by New Jersey building contractors in three of the state's five strike-bound counties. Here, the action is described as a shutdown rather than a lockout.

Shutdowns stemmed from the inability of contractors (affiliated with the New Jersey Building Contractors Association) to schedule their operations on an on-again-off-again basis. From day to day, bricklayers and laborers in Bergen County and carpenters in Passaic and Essex Counties had threatened to strike. Now work in each of the counties is at a standstill, as are many projects in Morris and Union Counties.

Contractors still are determined to keep construction costs down and are seeking to hold wage increases to five cents or less if they fail in their current efforts to freeze wages. Some success has been achieved in Sommerset County, where laborers agreed to a 10 cent increase now for the next two years, and in Essex County, where bricklayers settled for a five cent boost.

In Cleveland, where the asbestos workers triggered off a strike that has idled 10,000 workers and shut down millions of dollars of projects, contractor emphasis has been on higher productivity and no increase in labor costs.

Agreement reportedly has been reached on a nine-point work practice code proposed by the contractors, and the present stumbling block is one of wages. Indications last week were that most trades would settle for a one-year contract with a two-installment wage boost that would lead off with six cents.

When the asbestos workers struck, the Building Trades Employers Association, engaged in group bargaining with 19 crafts, urged contractors to maintain a solid front and not to be drawn into a whipsawing action where contractors are played off one against the other by one or more unions. "A strike against one is a strike against all," said the BTEA which has criticized the unions for their failure to maintain group-bargaining discipline within their ranks.

A lawsuit by Local 65 of the sheet metal workers union is now pending against 14 Cleveland contractors. Charge is that the employers violated the law by locking the workers out and refusing to bargain with them. BTEA attorneys, citing a U. S. Supreme Court case on group bargaining, say the employer position is legally sound.

• **Detroit, Boston**—Meanwhile, a strike of 6,000 members of the Detroit Carpenters District Council has hit the Detroit homebuilding industry.

All labor contracts with the Detroit building trades have expired. Multi-employer bargaining is under way with the three major contractor associations presenting a united bargaining front: AGC, Builders Association of Metropolitan Detroit and Carpenter Contractors Association.

The union is asking for a two-year package in the vicinity of 45 cents, claims its rate is below the national average and the demand reasonable. Employers say present conditions make a wage freeze mandatory, but the union accuses them of taking advantage of a present economic condition.

And in Boston contractors were thrown last week into their second major strike in three weeks.

Over 5,000 carpenters, rejecting an employer offer of 10 cents this year for three years, struck for an overall wage boost of 50 cents in a two-year contract.

• **Settlements**—Elsewhere the industry continued its labor ups and downs last week. Operating engineers were out in Cedar Rapids, Iowa, teamsters (building material) in Dallas, several trades in Dayton, Ohio, and painters in Philadelphia and in Albuquerque.

But settlements, nevertheless, were being reached. Here are a few:

• Wisconsin River Valley carpenters signed a one-year contract for 11 cents now and another 7 cents in six months.

• Electrical workers in Akron, Ohio, settled for eight cents now and seven cents September 29 in a one-year contract. Plumbers also accepted a one-year contract winning a 12½ cent package—5½ cents in wages, five cents for pensions and two cents for health and welfare.

• Laborers in Florida's Dade County won a novel, three-year multi-employer pact that uses the Davis-Bacon prevailing wage as the floor for wage increases. To that will be added 10 cents now, nine cents next April and eight cents in April 1960.

Hiring Hall Purge

Arizona contractor groups ask full union compliance

Contractors in Arizona have issued an ultimatum to the building trades unions on hiring hall arrangements. They threaten to adopt a "freedom of hiring" policy unless the unions can come up with legal and practical suggestions for preserving union hiring halls before June 1.

Such a policy could mean that contractors would no longer use the hiring hall as their access to the labor market.

The issue has come to a head not only in Arizona but in most union areas as a result of a clamp down by the National Labor Relations Board on hiring practices in the construction industry.

The board has ruled that any labor contract that surrenders the normal management hiring prerogative to a union is illegal. Typical of unlawful provisions is one that requires a contractor to obtain the workmen he needs from the union and that allows him to

turn to other sources only after the union supply has been exhausted.

Both labor and management in Arizona agree that the virtual closed shop in the state's construction industry may be headed for oblivion as a result.

The NLRB, however, has not outlawed all hiring halls—only those that provide for "unfettered union control over all hiring." Contractors and unions are considered jointly liable for any violations. After September 1 the board will give "full application" to the Brown-Olds rule that requires employers and unions to reimburse employees for all dues, permit fees, asesssments and initiation fees collected by the union while an illegal hiring provision is in effect.

Arizona contractors have announced that lip service to the law is not enough and that they will require full compliance with the law. The Arizona master labor agreement has been reopened for the purpose of correcting it to conform to the NLRB interpretation.

Ultimatum of the contractors is contained in a letter to the Phoenix Building and Construction Trades Council from representatives of the Associated General Contractors, Arizona Building Contractors, Arizona Home Builders Association and the Arizona Consolidated Masonry and Plastering Contractors.

The letter rejects any superficial approach to correcting present violations and any attempt to violate the law by an off-the-record or gentlemen's agreement.

Type of hiring hall valid under the law, according to the NLRB, is one so established and operated as not to encourage union membership. Any agreement that does not explicitly provide the following, it says, will be considered invalid on its face:

- Applicants for referral to jobs must be selected on a non-discriminatory basis. Selection shall not be based on or affected by union membership or compliance with union rules or by-laws.
- The employer must reserve the right to reject any applicant referred by the union.
- A notice as to how the hiring hall operates must be posted where all applicants can see it.

Fatal defect of most illegal hiring hall arrangements is that they discriminate against nonunion members. This is a violation of the Taft-Hartley Act, which makes it an unfair labor practice for an employer or union to pressure employees in the exercise of their right to join or not to join a union. Specifically banned are employer and union hiring practices that tend to encourage or discourage union membership.

OFFICIAL PROPOSALS

APPEAR HERE EACH THURSDAY. PROPOSAL ADVERTISEMENTS ACCEPTED UP TO 10:30 A.M. FRIDAY FOR THE ISSUE DATED THE FOLLOWING THURSDAY.

Bids: June 17, 1958

Contract BP-110.003

THE PORT OF NEW YORK AUTHORITY
BROOKLYN-PORT AUTHORITY PIERS
PIERS 1, 2 & 3
BOOSTER PUMP STATION

Sealed proposals for the construction of a booster pump station at the site of new Piers 1, 2 and 3 at the Brooklyn-Port Authority Piers will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N.Y., until 2:30 P.M. on Tuesday, June 17, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 22, 1958

Bids: June 5, 1958

Proposal No. 1253

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
2—Sets of 5KV PRIMARY SWITCHGEAR

Sealed proposals for furnishing two sets of 5KV Primary Switchgear for New York International Airport, will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A.M., Thursday, June 5, 1958, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon request.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 22, 1958

U. S. Government

Department of Commerce, Bureau of Public Roads, May 13, 1958. SEALED BIDS will be received at the office of the Bureau of Public Roads, Gatlinburg, Tennessee, until 11:00 a.m., E.S.T., JUNE 13, 1958, for Project 2V2-2W1, Blue Ridge Parkway, Transylvania, Haywood and Jackson Counties, North Carolina. Grading, Draining, Crushed Aggregate Base and other work from Beech Gap 11.570 miles to Racking Horse Gap. The approximate quantities of the more important items are 175 Acres Clearing and Grubbing, 1,008,500 cu. yd. Excavation, 80,000 Tons Crushed Aggregate Base and 10,870 lin. ft. Concrete Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the office of the Regional Engineer, 1440 Columbia Pike, Arlington, Virginia, or at the address given above. R. S. DuBois, Acting Regional Engineer.

BIDS: June 19, 1958

Erie County Water Authority

Notice is hereby given that sealed bids will be received in accordance with the law by the Erie County Water Authority until 10:30 o'clock A.M. Eastern Daylight Saving Time on the nineteenth day of June, 1958 at the office of the Authority, 338 Ellicott Square Building, Buffalo 3, New York, for furnishing materials and performing the labor for constructing the intake and intake tunnel for the Sturgeon Point Filtration Plant at Sturgeon Point, Town of Evans, Erie County, New York, all in accordance with plans and specifications prepared by Buck, Seifert and Jost, Consulting Engineers, 112 East 19th Street, New York 3, New York.

Copies of the plans and specifications may be examined without charge at the office of the Erie County Water Authority or at the office of the Consulting Engineers. Copies thereof may be obtained at either office upon deposit of Thirty ($30.00) Dollars, which sum will be refunded upon return of the plans and specifications in good condition within thirty (30) days after the date on which bids are received or else the entire deposit will be forfeited.

The work to be done includes furnishing all materials and labor, tools, plant and equipment necessary for constructing complete a water supply tunnel approximately three thousand (3,000') feet long extending beneath Lake Erie, a timber intake crib with an intake shaft at the Lake end, a combined intake shaft and distribution chamber for the low lift pumping station at the shore end and for performing the excavation for the low lift pumping station.

Each proposal must be accompanied by a certified check payable to the Erie County Water Authority or a bid bond to the favor of the Authority from a reliable surety company authorized to do business in the State of New York and satisfactory to the Authority, in amount equal to ten (10%) percent of the proposal. The certified check will be retained to pay for any damage or loss to the Authority, or the liability bond will accrue, in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Authority reserves the right to consider bids for forty-five (45) days after their receipt before awarding any contract and the right is reserved to accept any bid or to reject any or all of them.

The Authority has submitted applications for permits to construct the project to various Federal and State Authorities having jurisdiction and the Contract will not be executed by the Authority until these permits are issued.

ERIE COUNTY WATER AUTHORITY
By: WILLIAM J. CARNEY
Secretary

Buck, Seifert and Jost
Consulting Engineers
Dated: May 22, 1958

Bids: June 17, 1958

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Tuesday, June 17, 1958

For Throgs Neck Bridge Contract No. TN-10A, Bronx Approach Substructure. The bid must be accompanied by a deposit in the amount of $200,000.00

and

For Throgs Neck Bridge Contract No. TN-10B, Queens Approach Substructure. The bid must be accompanied by a deposit in the amount of $200,000.00.

Bidders may submit bid for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $30.00, which will not be refunded.

(Continued on the following page)

OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: June 5, 1958.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 5th day of June 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida	FAC 58-7	City of Rome: East Whitesboro St. Arterial	3.98	9" Cem. Conc. Pavt. = 3.07 Mi. Asph. Conc. Pavt. =	$375,000	$6,864,000
	FASH 58-4	City of Rome: Southerly Hwy. Connections	(5.55	0.91 Mi. 3 H.G.S. Comp. I-Beam 154.5', 137', 129'	Plans $20	
		Project U-UG-693(4), U-156(4)	Acc.)	1 Rrgs 384.5'; 1 Br. Girder & Comp. I-Beam 585.7' 1 Hgs Reinf. Conc. 36'		
DISTRICT No. 3, E. E. TOWLSON, Acting District Engineer, 333 E. Washington St., Syracuse, New York						
Cortland, Oswego, Onondaga, Tompkins, & Wayne	RC 58-39	9 Various Highways in District No. 3	25.36	Subsealing Cement Concrete Pavement	$18,000 Plans $2	$336,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 19)	FARC 58-28	Le Roy-Pavilion, Pt. 1, S.H. 5538	7.68	Asph. Conc = 7.68 Mi. Including Bridge Repairs	$45,000	$831,000
		Le Roy-Pavilion, S.H. 5582A	(0.38		Plans $5	
		Le Roy-Pavilion, Pt. 2, S.H. 5582	Acc.)			
		Project DF-1004(2)				
Monroe (Rte. 18)	FARC 58-38	Barnard Crossing, Pts. 1 & 2, S.H. 276	1.17	Asph. Conc. = 1.16 Mi.	$12,000	$211,000
		Project Dus-433(2)		Misc. Work = 0.01 Mi.	Plans $2	
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Niagara (Rte. 18F & 104)	FARC 58-50	Lewiston-Youngstown, S.H. 5306 Lewiston Village-Center St., S.H. 1724 Lewiston-Dickersonville, S.H. 617	1.49	Asph. Conc. = 1.39 Mi.	$20,000	370,000
		Project DS-492(1)		Misc. Work = 0.10 Mi.	Plans $2	
Erie (Rte. 5)	FARC 58-35	Lackawanna City, South, S.H. 5071 Lake Shore-Lackawanna City, S.H. 5019 Project DU-750(13)	0.58	Asph. Conc., Ty. 2A = 0.49 Mi. Misc. Work = 0.09 Mi.	$20,000 Plans $2	362,000
Erie & Cattaraugus	FASS 58-7	Johnsons Corners-Sardinia, C. R. 225 & 225A Yorkshire Corners-Sardinia Rd., C.R. 72 Project S-456(1)	1.17	Stab. Gravel-Mixed = 1.14 Mi. Asph. Conc. Ty. 2B (Br.) = 0.03 Mi. Including Pres. Conc. Br. 3 Spans 60' Each	$20,000 Plans $2	$378,000
Niagara	FAC 58-8	City of Niagara Falls Arterial Route (Walnut Ave. and Ferry Ave.) Project Du-500(10)	4.11	Traffic Signal System	$6,000 Plans $2	$111,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Alleghany	RC 58-43	Black Creek-Belfast, PSC 4652, S.H. 8529 Belvidere-Transit Bridge-Angelica, Br. No. 2, S.H. 1260 Belmont-Phillips Creek, Pt. 1, Br. No. 1, S.H. 1559	....	Cleaning & Painting 3 Bridges	$900 Plans $2	$16,000
Alleghany (Rte. 17)	FARC 58-37	Bolivar-Wellsville, Pt. 2, S.H. 8253	0.05	Bridge Repair	$4,000	$75,000
		Project DF-421(8)			Plans $2	
Schuyler & Yates (Rte. 14)	FARC 58-44	Gabriels Corners-Starkey, Pt. 2, S.H. 8399 Starkey-Dresden, Pt. 1, S.H. 8399 Starkey-Dresden, Pt. 2, S.H. 8353 Project F-505(7)	10.52	Asph. Conc. = 10.47 Mi. Misc. Work = 0.05 Mi. Including Widen Br. 3-Pl. Girder 411.1' Widen Br. 4-Pl. Girder & Truss—485.7'	$125,000 Plans $10	$2,280,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
St. Lawrence (Rte. 3)	FARC 58-41	Cranberry Lake-Seveys Corners, S.H. 8220 Franklin County Line-Seveys Corners, S.H. 8241 Project DF-382(7), DF-386(5)	1.41	Asph. Conc., Ty. 1A Including Br. No. 2 Twin Reinf. Conc. Closed Box Span 20' Each	$20,000 Plans $3	$372,000
Franklin	RC 58-48	Chateaugay-Clinton Co. Line, Br. No. 1, S.H. 5468 St. Regis Indian Reservation-Fort Covington, Br. No. 3, S.H. 1659 Hogansburg-Bombay, Br. No. 1, S.H. 820	....	Cleaning and Painting 3 Bridges	$1,000 Plans $2	$19,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Columbia (Rte. 9)	FARC 58-45	Livingston-Hudson, Pt. 1, S.H. 5072 Project DF-322(15)	3.46	Asphalt Concrete	$12,000 Plans $2	$212,000
Orange	PIP 58-1	Palisades Interstate Parkway, Sect. 1. (Queensboro Interchange)	0.67 (1.17 Acc.)	Cem. Conc. Pavt. with Carbon Blk. = 1.28 Mi. Misc. Work = 0.56 Mi. Including Hgs Comp. I-Beam 2 Spans Total 159.3' HGS R.C. Rigid Frame 59.4' Br. Twin R.C. Closed Box 15' Ea.	$80,000 Plans $5	$1,441,000
Rockland (Rte. 59)	FGRC 58-52	Knapps Corners-Nyack, S.H. 5178 Project Du-Dug-1096(3)	0.91	9" Reinf. Conc. Pavt. = 0.72 Mi. Asph. Conc. Ty. 2B = 0.09 Mi. Misc. Work = 0.10 Mi. Hgs & Rrgs Pres. Conc. Beam 322' Br. Pres. Conc. Beam 132'	$65,000 Plans $5	$1,170,000
Orange (Rte. 17)	RC 58-2	Palisades Interstate Park-Goshen, Pt. 3, FASH 53-7	0.44	Asphalt Concrete	$9,000 Plans $3	$159,000
Westchester	FINET 58-1 NET 58-2	New York State Thruway-New England Sect., Subdivisions 1, 2, 2A, 3, 4, 5 Project I-1068(16)	11.31	Chain Link Fencing Stabilized Bit. Shoulders Lighting Conduit System	$95,000 Plans $3	$1,613,000
DISTRICT No. 9, J. C. FEDERICK, District Engineer, 71 Frederick Street, Binghamton, New						
Chenango (Rte. 7)	FARC 58-42	York Afton-Bainbridge, S.H. 8075 Afton-Bainbridge, S.H. 5261 Project DF-360(10)	2.49	Asphalt Concrete Including Bridge Widening	$23,000 Plans $2	$402,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., New						
New York	FAHRD 58-1	York Harlem River Drive, Cont. 145A (West 145th St. to Seventh Ave.) Project U-UG-1133(2)	0.50	Asph. Conc = 0.48 Mi. Cem. Conc. Pavt. = 0.02 Mi. on Reinf. Conc. Slab and Pres. Conc. Viaduct	$280,000 Plans $20	$5,123,000
Suffolk	FASH 58-5	Sunrise Highway Extension, Cont. 1. (Phyllis Drive to Yaphank Ave.) Project DU-947(13)	6.82 (7.00 Acc.)	9" Cem. Conc. Pavt. = 4.46 Mi. Demolition = 2.16 Mi. Misc. Work = 0.20 Mi. Including 2 Hgs Comp. WF Beam 4 Spans @ 212 Tot. 4 Spans @ 212.3' Tot. Hgs Comp. Welded Pl. Girder 4 Spans 329.5' Tot.	$260,000 Plans $10	$4,724,000
Suffolk (Rte. 25)	FARC 58-57 FARC 58-57	Mattituck-Greenport, Pts. 1 & 3, S.H. 8229 Mattituck-Greenport, Pt. 4, S.H. 1719 Proj. DF-348(8)	2.62	Asph. Conc. = 2.49 Mi. Misc. Work = 0.13 Mi.	$42,000 Plans $3	$766,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City. The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON

SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: June 24, 1958

Contract NYA-920.003

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
RUNWAY V' AND INLAND TAXIWAYS
PAVING AND UTILITIES

Sealed proposals for the construction of paving and utilities for Runway V' and Inland Taxiways at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N.Y., until 2:30 P.M. on Tuesday, June 24, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 22, 1958

Bids: June 5, 1958

Proposal No. 1254

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
THREE 750 KVA POWER DISTRIBUTION TRANSFORMERS

Sealed proposals for furnishing three 750 KVA power distribution transformers for New York International Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, New York, until 11:00 A. M., Thursday, June 5, 1958, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon request.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, May 22, 1958

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You undoubtedly want their bids on your contracts. Make sure of them on your next contract.

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OFFICIAL PROPOSALS

Bids: June 11, 1958.

Contractors' Notice of Texas Highway Construction

Sealed proposals for constructing 14.502 miles of Gra., Strs. Shell Conc. Base & Hot Mix Asph. Conc. Pavt. from FM 1406 to SH 61 on Highway No. IH 10 FM 1724 covered by I 10-8(24)821, in Chambers County, will be received at the Highway Department, Austin, until 9:00 A.M., June 11, 1958, and then publicly opened and read.

This is a "Public Works" Project, as defined in House Bill No. 54 of the 43rd Legislature of the State of Texas and House Bill No. 115 of the 44th Legislature of the State of Texas, and as such is subject to the provisions of said House Bills.

This is also a Federal-aid project located on the Interstate Highway System and is subject to the provisions of the Federal-Aid Highway Act of 1956. No provisions herein are intended to be in conflict with the provisions of said Acts.

Minimum wage rates for this project have been predetermined as required by Law and are set forth in the bid Proposal.

Legal holiday work shall be paid for at the regular governing rates.

Plans and specifications available at the office of D. W. Syphrett Resident Engineer, Anahuac, Texas, and Texas Highway Department, Austin. Usual rights reserved.

Bids: June 24, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For Planting of Shrubs During 1958 and 1959 In Construction Spoil Areas
St. Lawrence County, New York
Specifications No. PA-5-11043
St. Lawrence Contract No. 49

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Planting of Shrubs during 1958 and 1959 in Construction Spoil Areas, St. Lawrence County, New York, until 10:30 A.M. Eastern Daylight Time on the 24th day of June, 1958 at the Authority's office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantity of work consists of furnishing and planting 43,115 deciduous shrubs.

All of the work shall be completed on or before December 1, 1959.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at the 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: June 10, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For Planting of Specimen Trees and Shrubs During 1958, 1959 and 1960
In Construction Areas and State Park
St. Lawrence County, New York
Specifications No. PA-5-11042
St. Lawrence Contract No. 48

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for Planting of Specimen Trees and Shrubs during 1958, 1959 and 1960 in Construction Areas and State Park, St. Lawrence County, New York, until 10:30 A. M., Eastern Daylight Savings Time on the 10th day of June, 1958 at the Authority's office, 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The estimated quantities of work are:

Furnishing and planting specimen deciduous trees	1,790 trees
Furnishing and planting specimen evergreen trees	1,350 trees
Furnishing and planting deciduous and evergreen shrubs	9,240 shrubs
Furnishing and planting vines and ground cover plants	14,600 plants

All of the work shall be completed on or before July 15, 1960.

Plans, Specifications and Proposal Forms for the work, may be obtained from the Power Authority of the State of New York, at the 18th Floor, the Coliseum Tower, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and The Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, and may be inspected by prospective bidders during office hours.

Bids must be made in duplicate in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

U. S. Government

Department of Commerce, Bureau of Public Roads, May 13, 1958. SEALED BIDS will be received at the office of the Regional Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., JUNE 13, 1958, for Project 1A15, George Washington Memorial Parkway, Arlington and Fairfax Counties, Virginia. Paving, Spout Run to Leesburg Road (Va. State Route 123). Length: 3.512 miles. The approximate quantities of the more important items are: 76,000 cu. yd. Selected Borrow Topping, 18,000 cu. yd. Crushed Aggregate Base, 18,500 tons Bituminous Concrete Base, 15,500 tons Hot Bituminous Concrete Pavement, and 78,975 lin. ft. Concrete Curb. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above. R. S. DuBois, Acting Regional Engineer.

Department of Commerce, Bureau of Public Roads, May 9, 1958. SEALED BIDS will be received at the office of the Bureau of Public Roads, First National Bank Building, Florence, Alabama, until 10:00 a.m., C.S.T., JUNE 10, 1958, for Project 3R1, Natchez Trace Parkway, Hinds and Claiborne Counties, Mississippi. Grading, Gravel Base Course, Structures and Bridges and other work. (Oakley-Edwards Road 13.890 miles to Utica-Regantown Road). The approximate quantities of the more important items are 1,421,500 cu. yd. Excavation and Borrow, 7,425 cu. yd. Concrete, 1,190,000 lb. Reinforcement Steel, 106,000 tons Gravel, and 5,285 lin. ft. Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications and proposal forms are available upon request at the address given above or Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia. R. S. DuBois, Acting Regional Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5056) will be received at Farmington, New Mexico until June 19, 1958, for furnishing labor and materials for Navajo Dam and Access Roads, Colorado River Storage Project, Colorado-New Mexico. Location near Farmington, New Mexico. Principal items are 1,500,000 cu. yds. excavation for dam embankment foundation; 25,774,000 cu. yds. excavation in borrow area and transporting to points of final use; 126,000 barrels furnishing and handling cement; 7,560,000 pounds furnishing and placing reinforcement bars; 509,000 pounds furnishing and placing permanent structural steel supports; and other work. Completion time 1,700 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; Farmington, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: May 29, 1958

Soil Explorations and Foundations Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 a.m. Advanced Eastern Standard Time, on May 29, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for:

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THROGS NECK EXPRESSWAY, INTERSTATE ROUTE 513, PROJECT 1-1112(2), BRONX COUNTY, WHICH CONSTITUTES CONTRACT SPEC. NO. FA-SM-126.

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, N. Y.
(b) Mr. M. E. Goul, District Engineer, New York State Department of Public Works, 325 West Main Street, Babylon, Long Island, N. Y.
(c) Mr. William M. Trainer, Associate Contract Engineer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50 percent of deposit.

The Engineer's Estimate of cost for this work is $12,375.00.

Proposal for this contract must be submitted in separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $1,000.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPERINTENDENT OF
PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: June 18, 1958

Triborough Bridge and Tunnel Authority

SEALED BIDS WILL BE RECEIVED BY Triborough Bridge and Tunnel Authority at its office, Administration Building, Randall's Island, Manhattan, New York 35, N. Y., as follows:

Until 11 A.M. on Wednesday, June 18, 1958

For Throgs Neck Bridge Contract No. TN-10C, Bronx Approach Superstructure Steel. The bid must be accompanied by a deposit in the amount of $250,000.00

and

For Throgs Neck Bridge Contract No. TN-10D, Queens Approach Superstructure Steel. The bid must be accompanied by a deposit in the amount of $250,000.00.

Bidders may submit bid for either one or both of the above contracts.

Plans, specifications and contract documents may be purchased at the office of the Authority for $30.00, which will not be refunded.

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POSITIONS VACANT

Bridge Designing Engineer, well qualified. Forward resume of education and experience with salary requirements to Macomber & Faber, 1824 N. 4th St., Harrisburg, Pa.

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

Wanted: Engineer Estimator, Missouri General Contractor, work in home office estimating heavy and highways, including, bridges, airports, dams, earth and concrete. Experienced estimator only need apply. Salary open as to qualifications. P-7920, Engineering News-Record.

Four Draftsmen, Civil, Water and Sewerage, Layout Experience. Also one Chief of Party, Land Surveying, Municipal and Subdivision Experience, New Jersey Shore Area. P-7961, Engineering News-Record.

Graduate civil or architectural engineer with professional license or equivalent qualifications. Substantial experience in building design and construction or in structural research together with ability to prepare technical publications. Position open is that of design engineer with a National trade association in Chicago. Good starting salary. Please furnish photo and complete resume, including salary desired, in first letter. P-8017, Engineering News-Record.

General Superintendent—Mid-West General Construction firm engaged in Commercial, Industrial, Public Works, Sewers, Bridges, Dams and Reservoirs has opening for qualified general superintendent. Applicants should have experience and be capable of coordinating all types of above work. Complete experience and education data, references and salary expected should be furnished in first reply. P-8023, Engineering News-Record.

POSITIONS VACANT

Wanted—Structural Designers and Drafts-men experienced on reinforced concrete and structural steel work, Engineering Firm San Francisco, Calif. Write stating age, education and experience. P-8030, Engineering News-Record.

60 year old Construction firm operating in Central New York needs capable superintendent experienced in school construction to start work June 2nd if possible. Give full information & wage desired above expenses. P-8036, Engineering News-Record.

Have opening for several recent Civil Engi-neer Graduates with military obligations completed who desire to learn the construction business. Must be ambitious, aggressive, use no intoxicants, preferably single, willing to start in the field on industrial buildings and heavy construction, and willing to move. We operate throughout Kansas and adjacent states. Our organization offers excellent opportunity for advancement. We pay top wages. Martin K. Eby Constr. Co., Inc., P. O. Box 1679, Wichita, Kansas.

POSITIONS WANTED

Construction Manager: 15 years diversified experience, Exec. Ability, Engineering and Field Supervision, Estimating, Expediting. Complete Industrial and Power Plant Building Construction, with Process Installations, from customer contact to completion of projects. Desire permanent connection with Engineering and Construction Firm, Industrial Firm or expanding Power Utility Co. PW-7865, Engineering News-Record.

Reinforcing Steel Detailer—Estimator with 20 years experience available. PW-7914, Engineering News-Record.

Vice-President, medium size construction firm; Registered Eng., Bachelor's Degree Civil Eng., Master's Degree Bus. Admin., 10 yrs. experience one firm as Field Engineer, Superintendent, Estimator and Project Manager, Partner. Age 35, married, 3 children, Scandinavian. Salary past 4 yrs. $15,000 adjusted by bonus & dividend. Desire aggressive position with opportunity. PW-7698, Engineering News-Record.

(Continued on opposite page)

POSITIONS WANTED

(Continued from opposite page)

Project Director, General Manager, 39, heavy construction Govt. and State, Florida highway construction 12 yrs estimating and field experience, graduate engineer and now employed. PW-7915, Engineering News-Record.

Top Flight Constr. Man—Project Managed— Gen. Supt. Field Supt. capable of handling—organizing estimating bridges — concrete dams—tunnels—power plants—public bldgs —commercial bldgs—industrial plants—water treatment—sewage treatment plants—housing development—sewers—coffer dams heavy foundations—driving piles. 25 years exp., 45 yrs, B.S.C.E. Registered. Now working. PW-7953, Engineering News-Record.

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Construction Superintendent engineering background 45, 20 yrs exp in heavy construction & building trades in chemical, atomic, hydroelectric plants. Earthrock fills & electronics R.R. yds. Will travel anywhere. PW-7991, Engineering News-Record.

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Construction Superintendent—General Construction: PW-7720, Engineering News-Record.

Chief Estimator, General Construct. available. Public Works, Industrial, Buildings. Prefers NYC home office. Will travel. References. PW-8021, Engineering News-Record.

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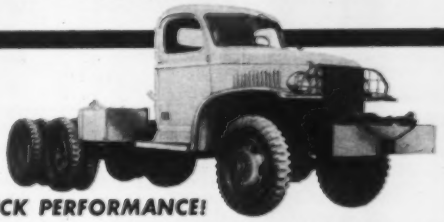

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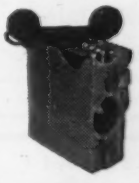

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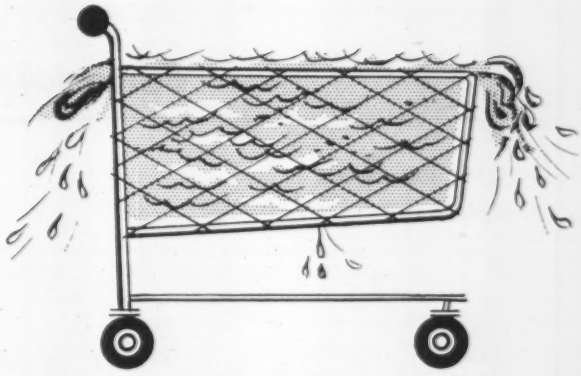

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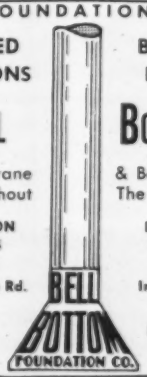

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Roads Begin to Roll

CONTRACTS ON ROAD CONSTRUCTION finally have begun to poke into view, like spring flowers. And as with the flowers, they are doubly welcome this year because they have been so long in coming. Back in January and February, road contracts lagged about 25% behind the same months a year ago. But in March the lag was cut to 12%, and now, after four months, contracts are trailing 1957 by only 4%. Actually, the month of April 1958 chalked up 20% more road construction contracts than did April 1957, a truly phenomenal spring push.

There is every indication that the tempo will not slacken again this year, for never before have states, counties and cities had such a desire to make progress. Thwarted last year by right-of-way problems, design delays and some unexpected financial troubles, they have worked diligently to remove these handicaps. And the plans they have made for the 1958 construction season offer powerful proof that they think they have succeeded.

If all plans are realized, contracting by state highway departments and tollroad authorities would reach the unprecedented total of $4.9 billion, which would be 33% above 1957 awards. Cities and counties are expected to contract for as much as $500 million of new roads, so that the nation's total road program could hit $5.4 billion.

No such year-to-year increase has ever been recorded, but it is significant that the highway authorities are planning to make it possible. It is also significant that this planning was done before the passage of the emergency highway bill last month, which swelled the amount of money available during this calendar year by something in the neighborhood of $1 billion. This comes about by a $200 million additional authorization for the interstate system, which is to be made available on a 90:10 federal-state matching basis, and by a $400 million extra authorization on other federal-aid roads, to be made available on a 66⅔:33⅓ matching basis.

Past experience would indicate that the states would probably not realize all of their original $4.9 billion contracting hopes. Any falling off here, however, should be made up by the new emergency money for the non-interstate roads, which has to be turned into contracts before the end of the year by the terms of the legislation.

All in all, total road construction in 1958 should reach the $5 billion mark for the first time in history. What is additionally worth noting is that both interstate and other federal-aid road authorizations have been stepped up for the next two fiscal years, so that a continuing high-level program can be planned for and counted on. In many respects this is the most important development to come out of the emergency legislation—and the best possible means to combat the current recession—for it is only the ability to plan ahead that fosters such business generating activities as equipment purchases and high engineering and construction employment.

Road construction is beginning to roll, and the best news is that it seems destined to continue to gain momentum until a speed is attained that is commensurate with the nation's annual roadbuilding needs.

More, Rather Than Less

OPPONENTS OF AID to underdeveloped countries will no doubt use the troubles in Lebanon and the shameful treatment of Vice President Nixon in Peru and Venezuela to bolster their contention that our foreign aid program is a waste of money. "If our generous and humanitarian efforts can't at least buy friendship, what's the use," they will say. And it's a perfectly natural reaction. The only trouble is that it is not realistic, and it's a dangerous attitude to harbor.

The purpose of foreign aid is not to buy friendship, although it does make many more friends than the all-too-frequent mob scenes suggest. Its purpose is to advance our security. And despite dissident minorities, dissatisfied with what they think they deserve—or just paid to act nasty—real progress has been made. The technical assistance in the form of schools, dams, roads, housing and improved sanitation, which have been provided by our foreign aid program, has bound many people to us, who would have sought help elsewhere.

Many of the countries we have aided are also in a position to provide us with vital raw materials, without which our security would be further imperiled. Peru and Venezuela are cases in point, and it is quite possible that one of the reasons for the riots there—at least one of the excuses used to inflame the mobs—was that we had been cutting down on our raw material purchases, and thus depriving these countries of income.

In Lebanon the riots have a different origin—a political campaign against a regime that is friendly to us—but the value of foreign aid is rendered no less potent by them. Lebanon is important to us as a window into the Middle East, and a place where Western standards of living can most easily flourish and set an example.

In other countries foreign aid produces other values, but in all cases it is an investment in our security. Also because a sizable part of the investment finds its way back into our own business channels through foreign purchases, payments for our construction services and the like, foreign aid bolsters our own economy. Whatever small part of it is simple charity is not beyond our capacity to provide, nor out of keeping with our basic humanitarianism or our position of world leadership.

Congress is in the process of passing a new foreign aid bill this week. It should not be influenced by the recent riots. If anything, they suggest the need for more rather than less foreign aid.

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